MAY 28, 1955

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MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING •

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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Guaranteed Circulation This Issue

10,510 of Which 9,973 is Paid

You don't even have to change their telephone number!

Stromberg-Carlson's Fourth Wire makes "terminal-per-station" assignments easy. You can eliminate the need to change a subscriber's number when he changes location.

Here's how . . . By arranging for "terminal-per-station" operation in your dial office, you gain a new flexibility that permits moving a subscriber from one cable pair to another, or to another party line, without having to assign a new number. This feature makes even traffic distribution possible on all switching groups without making any equipment or trunking changes.

Higher revenues made feasible

You can upgrade that subscriber from multi-party service to single party, without number changes. Not only do you save on directory changes, but you also use less equipment and operator time for intercept service, since there are no number changes. One hundred percent intercept of all unused numbers can be provided at very nominal cost—a requirement for nationwide dialing.

"Terminal-per-station" works this way: Each station has its own connector-terminal—instead of one connector-terminal serving the whole party line.

Service more than tripled

You get more revenue from your equipment, because one office code will serve a maximum of *10,000 stations* in a "terminal-per-station" office but would serve only 3,000 stations in the average terminal-per-line office.

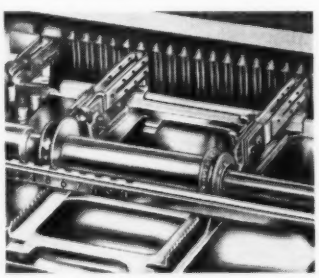
You can get the advantages of "terminal-per-station" operation with an XY® System, because of Stromberg-Carlson's unique Fourth Wire.

This Fourth Wire can mark each connector-terminal individually for any desired ringing. This means that practically all subscriber shifts within the office area can be handled without number changes, and efficient fill of connector-terminals can be maintained.

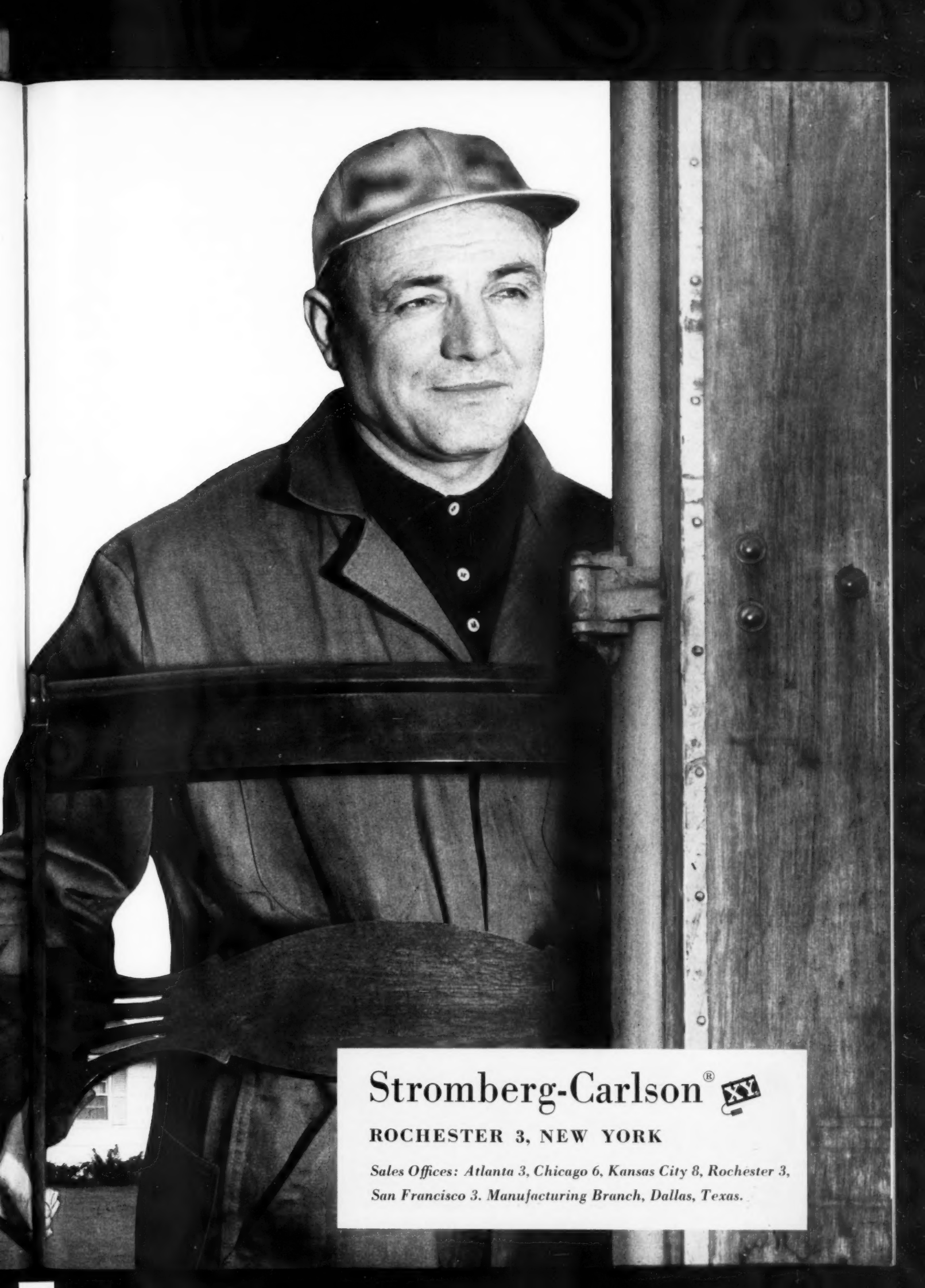
Cost lowered, too

Since the Fourth Wire is an integral part of every XY System, you get all the advantages of "terminal-per-station" operation at much lower cost than with other systems not having this Fourth Wire.

Your Stromberg-Carlson representative will be glad to answer your questions about frequency marking and "terminal-per-station" operation. Call or write him.



EXCLUSIVE FOURTH WIRE provides maximum efficiency in loading party lines. When a subscriber requires a different ring, you simply change a jumper to the Fourth Wire, and the shift is made. Result: His number stays the same, and you have a possible 100% cable fill.



Stromberg-Carlson®

ROCHESTER 3, NEW YORK

Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3. Manufacturing Branch, Dallas, Texas.

Telephone accounting made thrifty!

Burroughs Sensimatic Accounting Machine

One Sensimatic handles all revenue and general accounting—local service and toll billing; accounts receivable; revenue and tax summary records; check, earnings statement, employees' and payroll ledgers; accounts payable; materials and supplies ledgers. Each interchangeable sensing panel gives you what amounts to four specialized automatic machines in one. Low first cost and high work output mean maximum accounting economy.

Burroughs Director Accounting Machine

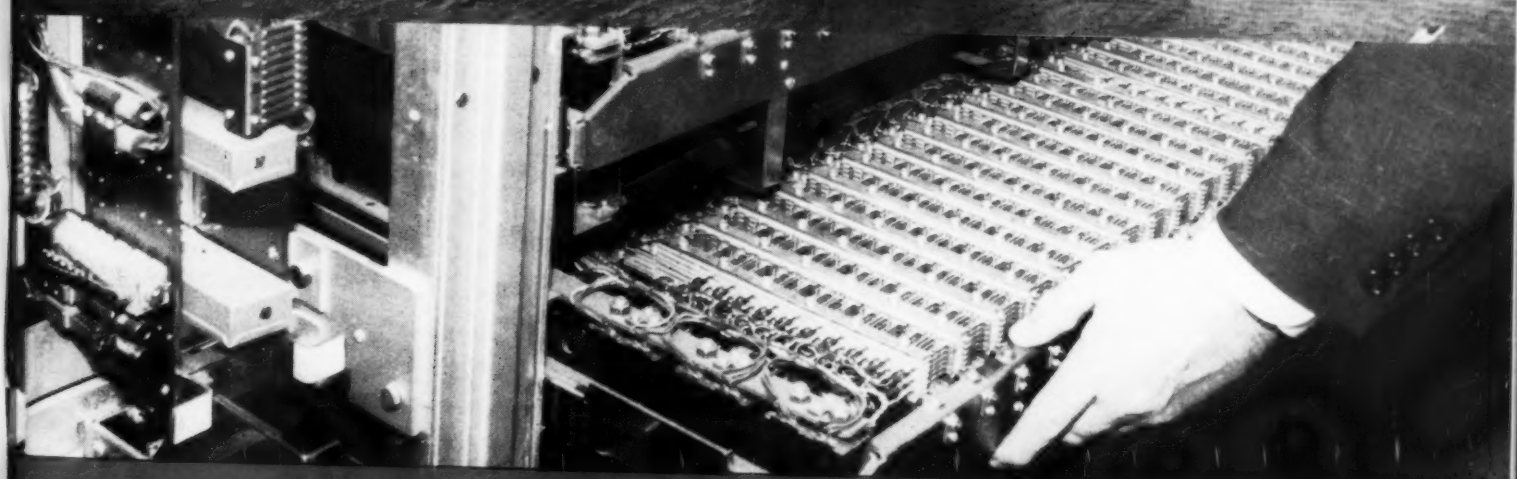
This new, low-cost accounting machine makes it possible to mechanize accounting jobs that waste time and sacrifice efficiency, but are not complex or large enough to justify the use of higher cost equipment. Fast, front-feed form insertion, automatic carriage tabulation and return, shortcut keyboard and other modern features accelerate and simplify any bookkeeping job you give the Director.

Burroughs Receipting and Validating Machine

Mechanical receipting builds confidence with your customers. The same receipt data appears on your bill and the cashier's stub. You get positive control of cash receipts—protection for your company, your cashiers, your customers. This machine marks the bill "PAID" and identifies it by transaction number, date, amount, and cashier's symbol. All this is recorded on the locked-in tape; receipts are accumulated in the locked-in daily total register.

"Burroughs" and "Sensimatic" are trademarks.
Burroughs Corporation, Detroit 32, Michigan

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

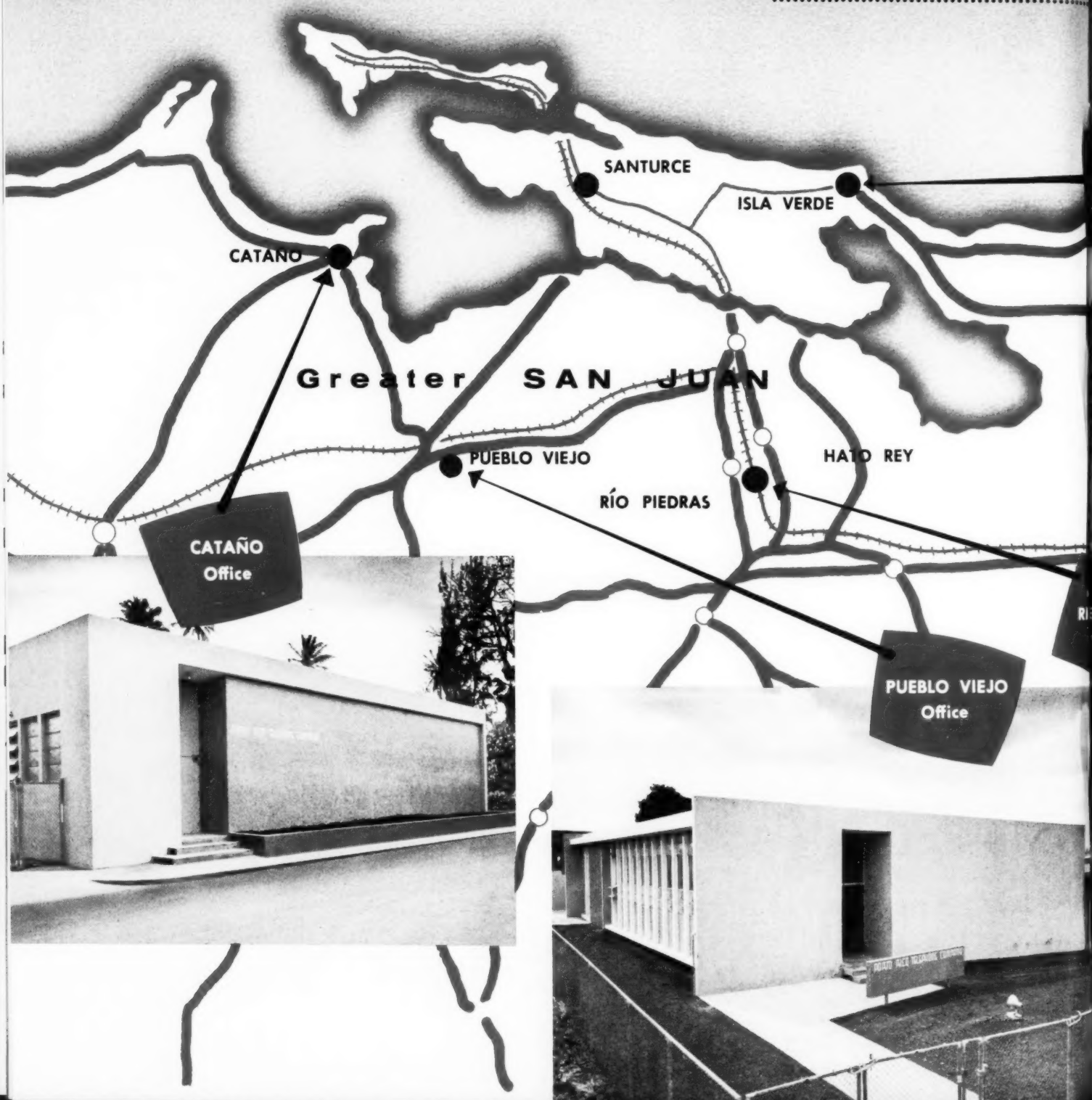


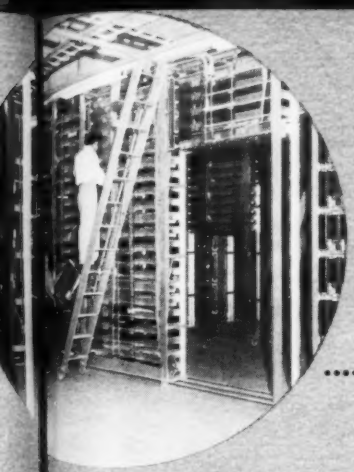
Rest of Greater SAN JUAN PUERTO RICO

GOES **MODERN** with

KELLOGG CROSSBAR

INSTALLATION OF KELLOGG CROSSBAR IN 4 DIAL OFFICES KEEPS ISLAND'S PHONE SERVICE IN STEP WITH "OPERATION





IN BOOTSTRAP"

PUERTO RICO in 1948, under the leadership of Governor Luis Muñoz Marín, launched the famous "Operation Bootstrap" — a program that places great emphasis on helping United States manufacturers establish factories on the Island. The success and rapid growth of Puerto Rico's industrialization has resulted in the construction of more than 300 new factories and the creation of more than 50,000 new jobs in the few years since the program's inception.

4 MODERN OFFICES, 7600 LINES

The extraordinary economic growth of this Island which is situated in the Carribean area 1,600 miles southeast of New York and 1,000 miles southeast of Miami, has created the greatest demand for telephone service in the Commonwealth's history.

Alert to its responsibility as a public servant, the Porto Rico Telephone Company set out upon a comprehensive program of expansion and development. The high point of this program was reached April 9 when all of the manual equipment throughout the metropolitan area of San Juan — a city of 500,000 inhabitants — was replaced with modern Kellogg Crossbar dial switching equipment.

The Santurce office, an integral part of this great new telephone system, has been in operation since 1945 with 14,000 lines of Federal 7A-2 Rotary equipment.

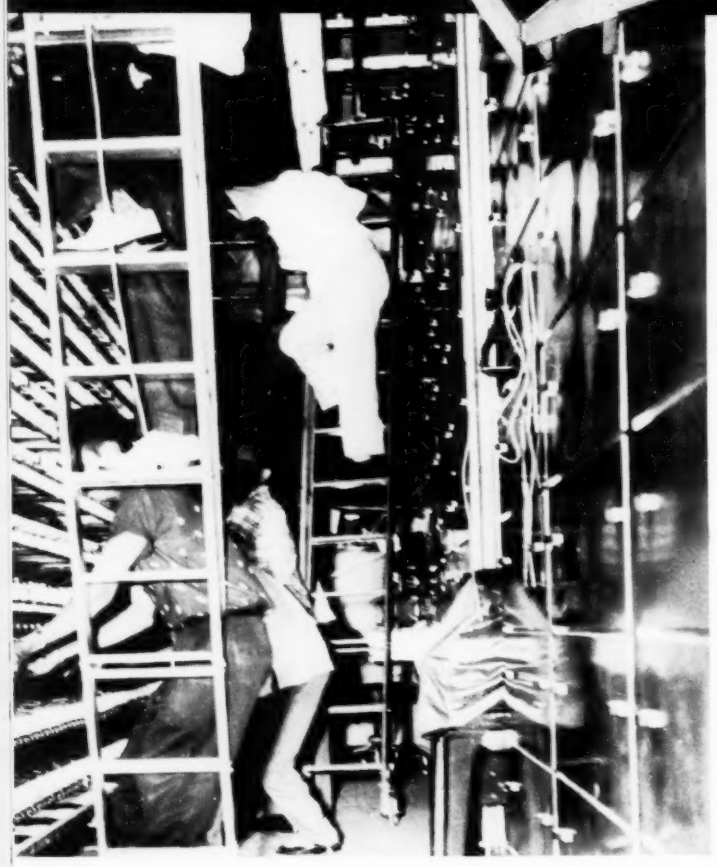
The conversion to Kellogg Crossbar involved the construction of four new dial central offices, housing a total of 7,600 lines of equipment. These offices are: Rió Piedras with 5,000 lines; Pueblo Viejo, 1400 lines; Cataño, 600 lines, and Isla Verde, 600 lines.

READY FOR FUTURE EXPANSION

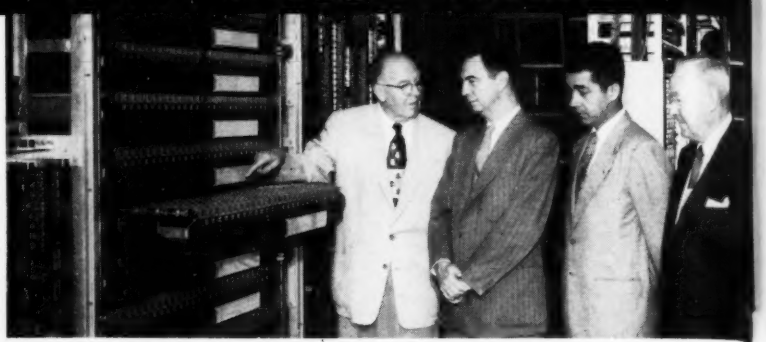
With new manufacturing plants going up at a fast rate, and previously established plants expanding, the Porto Rico Telephone Company is already making plans for the future. All of the new telephone buildings are equipped with one or more walls of aluminum panels which can be easily removed for quickly adding new facilities. Besides the conversion of the San Juan area, plans call for the conversion to dial of several other areas on the Island.

Rest of Greater
SAN JUAN
PUERTO RICO

Goes Modern with Kellogg Crossbar



CUT! The cutover signal was given when traffic reached a low ebb at all four manual offices. Then the technicians went to work, quickly removing plugs from the old equipment. Suddenly, a dead silence fell over the room as the first dial calls began flowing through the modern Crossbar switching equipment . . . quietly, swiftly and without interruptions.



INSPECTION — Porto Rico Telephone Company officials and representatives from Kellogg inspect new Crossbar dial switching equipment at the Isla Verde Central office. From left to right: C. J. Adams of Kellogg; J. D. Domínguez, Executive Vice-President and General Manager, and G. Lavergne, Chief Engineer of the Porto Rico Telephone Company; and F. B. Longfellow of Kellogg.

41 MINUTES BEFORE EASTER — Officials and engineers of the Porto Rico Telephone Co., and representatives of the press gather around control equipment at the Río Piedras central office waiting anxiously for the signal marking the merger of some 30,000 stations under one dial system. At 11:19 p.m. on April 9, the cut was made. It took just nine minutes, but completed a three-year dream of the Porto Rico Telephone Co. to bring the finest possible dial service to the rest of the greater San Juan area.

KELLOGG FIRST WITH CROSSBAR FOR THE INDEPENDENT

KELLOGG DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY
A Division of International Telephone and Telegraph Corporation
Sales Offices: 79 West Monroe Street, Chicago 3, Illinois

Printed in U.S.A.

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Be sure to use

ANSONIA Ankoseal®

THE first ALL-PLASTIC CABLE

The modern world depends on the telephone. Telephones depend on modern cable. **Ankoseal**, the first all-plastic cable, has the quality to provide dependability. It has excellent transmission characteristics and at the same time it eliminates wet cable trouble, it reduces lightning hazards, its light weight makes for easy, economical handling and it costs less per pair mile per year of service.

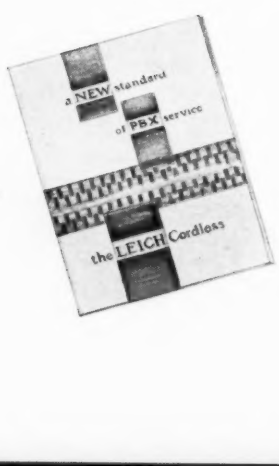
***ANKOSEAL CABLE** is sold to independent telephone companies through authorized Telephone Supply Distributors only.*

THE ANSONIA WIRE & CABLE COMPANY

ANSONIA, CONNECTICUT Phone REGENT 4-3306

We're so proud to show you this revolutionary new

LEICH Cordless!



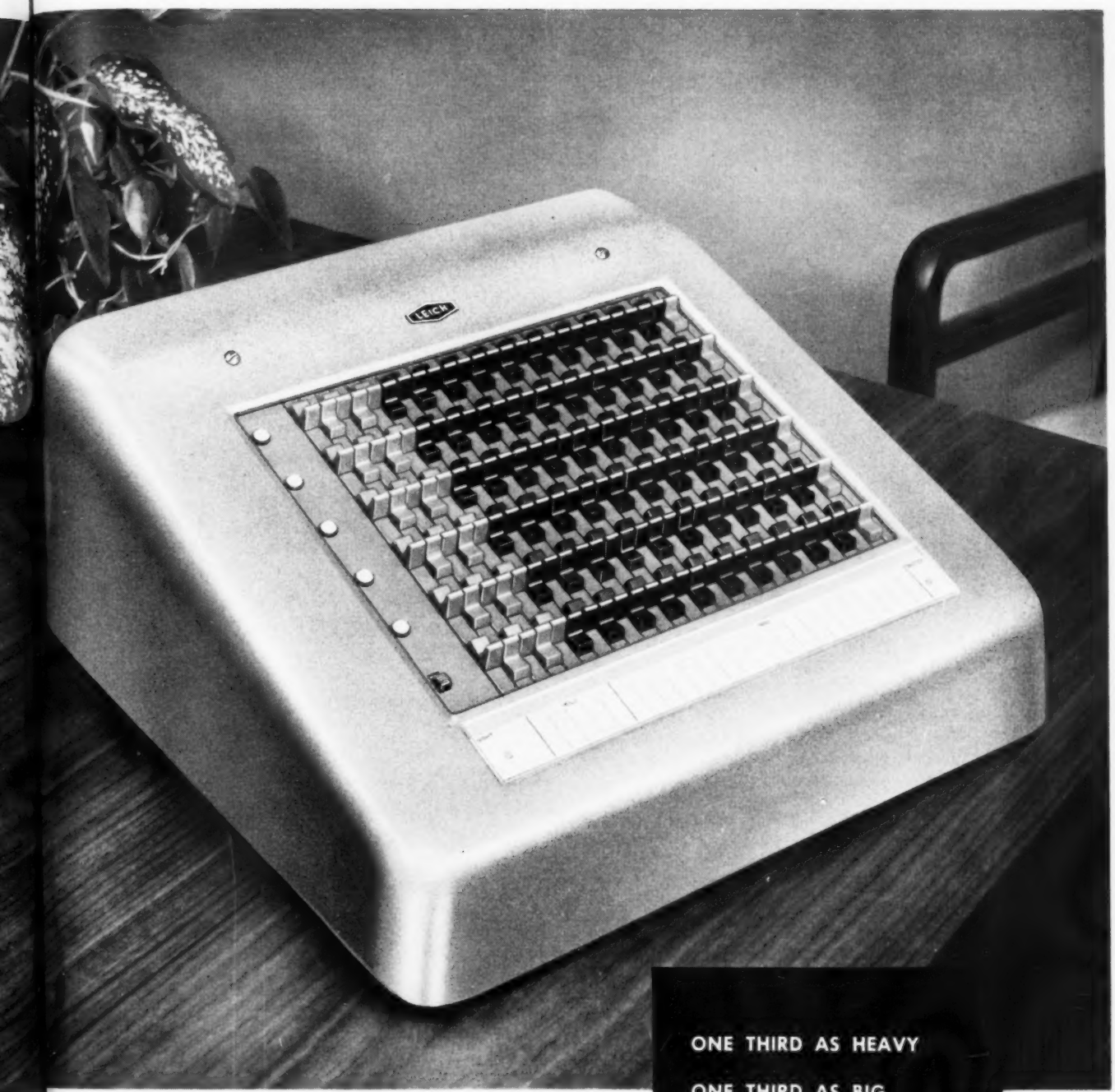
"WOW!" And that's a *perfectly normal* reaction to this handsome new Leich Cordless PBX Switchboard.

It takes no more space in your customer's office than a modern business machine. It's fully equipped with 20 lines, 5 trunks and 5 conversation channels.

The one-way keys and unique design make it *so* easy to operate. And . . . the new type keys and simplified arrangement make this new Leich unit the most trouble-free cordless you've ever seen. You'll really SELL with this new LEICH Cordless.

WRITE FOR THE NEW CORDLESS CATALOG

LEIC



ONE THIRD AS HEAVY

ONE THIRD AS BIG

ONE-WAY, FINGERTIP KEYS

FIFTY-FOUR PERCENT LESS SOLDERED CONTACTS

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IFIC COAST: 2611 SAWTELLE BLVD., LOS ANGELES 64, CALIF. SOUTHWEST: 1227 SLOCUM ST., DALLAS 7, TEXAS

GENERAL SYSTEM

FLASHES AND PLUGS

HOW RUMORS ORIGINATE. It has been reported from Elmira, N. Y., that sharp-eyed readers of the Elmira *Star-Gazette* recently noticed two unsettling ads in the classified section:

1) "Sausage stuffer wanted; phone Montour Falls 4986," and

2) "Paying up to $6.00 for standing horses, up to $6.00 for disabled cows and horses; dead animals removed free of charge; call collect 4986, Montour Falls Rendering Works."

• • •

WRONG NUMBER. In Philadelphia, a night watchman in the zoo was summoned to the switchboard when a light flashed, but no one answered his "Yes please?"

"Burglars," he decided, "in the curator's office."

Pistol in hand he went to the office and found that a black leopard cub, bedded down in the office to convalesce from a touch of sickness, had knocked over the telephone in wandering about the room.

• • •

BURNING QUESTION—WHICH? "Sure, go ahead and use the telephone," a garageman in Helena, Mont., told a customer, adding as a joke: "But it will cost you a nickel." After he finished, the caller tossed the nickel atop the telephone box.

The coin is still there. "Thousands of people have used the telephone since," says the garage owner. "They're either an honest lot or they think a nickel isn't worth picking up."

• • •

PROGRESS IN THE DOG POUND. To catch stray dogs more quickly the Genesee County dogcatcher up in Michigan is going to be radio dispatched.

The dog warden said four of his trucks will be equipped with two-way radios connected with the sheriff's office.

• • •

TIME MARCHES, ETC. The Pony Express was the "hot rod" of its day, but the science of communications has also moved speedily ahead.

On the 95th anniversary of this celebrated express service, the Continental Air Command established a "hot line" long distance telephone service along the famous stretch between St. Joseph, Mo., and Sacramento, Cal.

Air Defense Headquarters said the telephone hook-up was accomplished in seconds . . . in 1860 it took the express riders 10 days and some well-lathered horses to carry a message the same distance.

CIRCULATION

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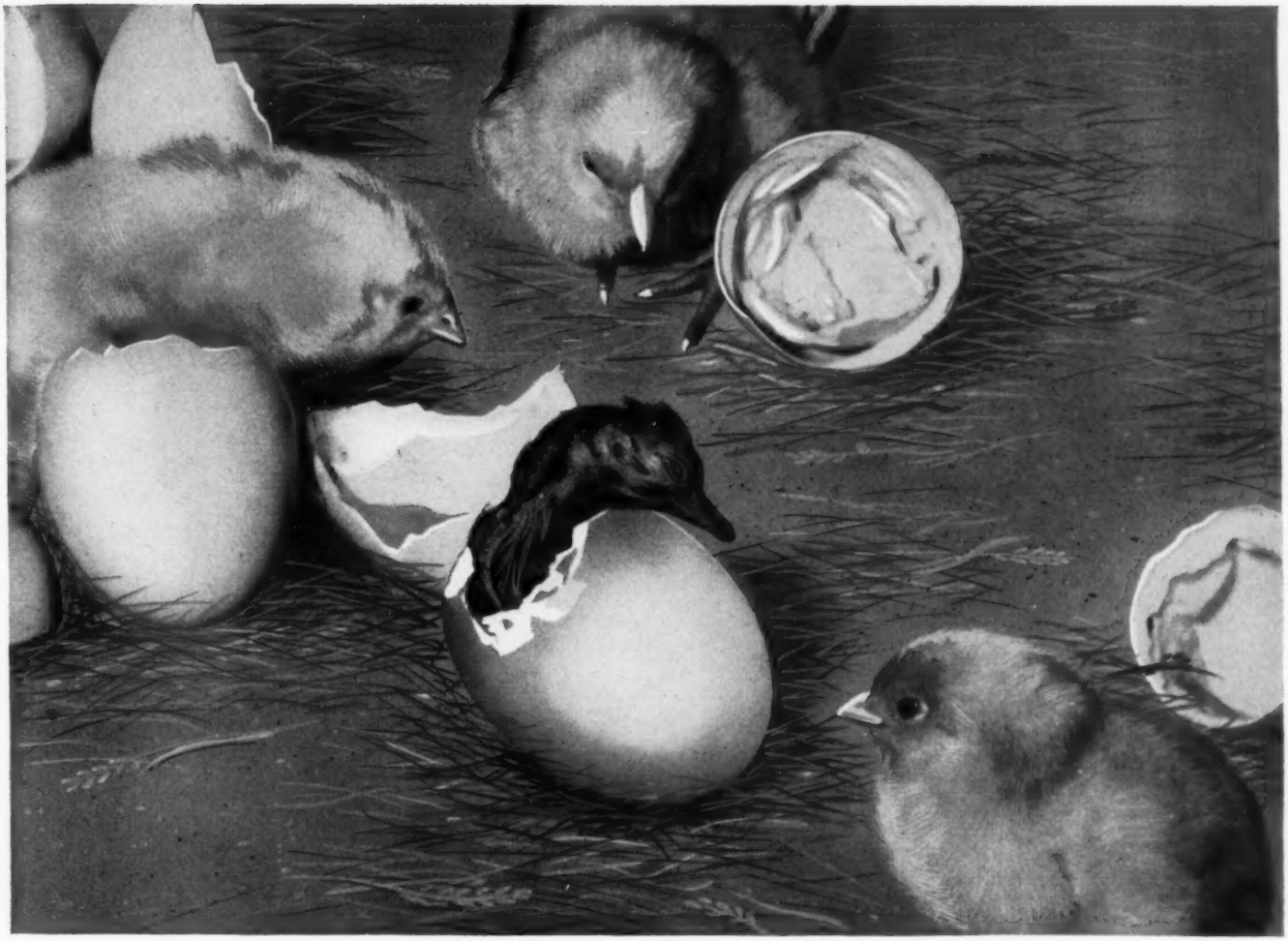


Find trouble BEFORE it hatches!

Automatic's Type 22 WIRE CHIEF'S TEST UNIT

TYPE 22'S SO SIMPLE, it encourages your men to make tests frequently! Result: they find cable pairs that are only *starting* to cross, and connections that are only *beginning* to develop high resistance. They can take prompt measures that save big repair bills later —and your subscribers get uninterrupted good service!

By merely operating a few keys and noting the voltmeter reading, your maintenance man can do all the testing necessary in a small central office. After plugging a test shoe into a line, he can check grounds, opens, crosses, and shorts, test ringing, test station equipment on a line, and monitor lines under test. He can also make two-way service calls. With the proper accessories, he can test dial speed and provide howler tone.

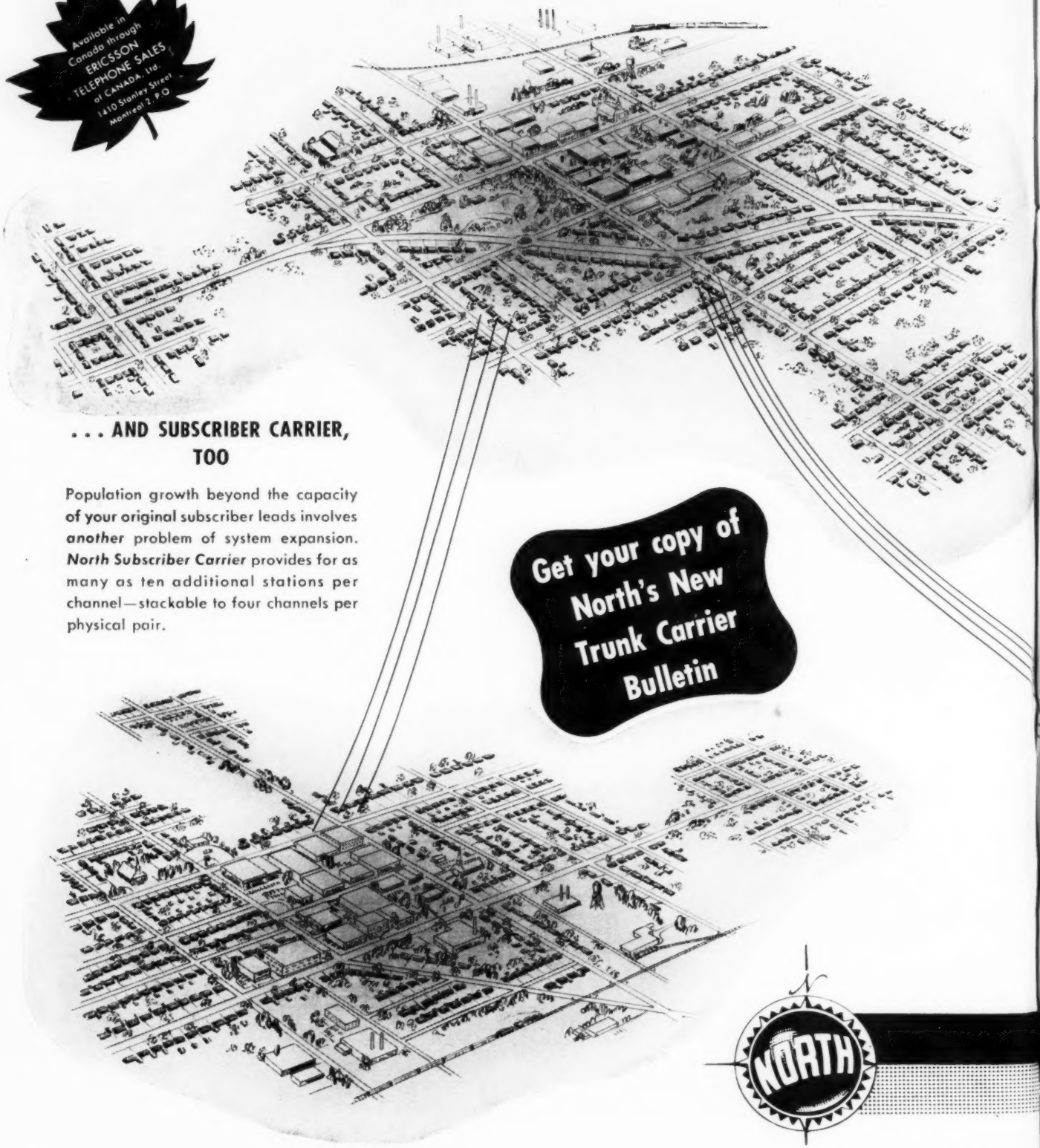
In automatic, CB manual, and magneto offices of up to 400-line capacity, Type 22's are proved time-savers. Ask for new Circular 1837, giving full data on models for straight-line and harmonic ringing. *Address: Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE AUTOMATIC DIAL TELEPHONE

As Communities

Available in Canada through ERICSSON TELEPHONE SALES of CANADA, Ltd. 1410 Stanley Street Montreal 2, P.Q.



. . . AND SUBSCRIBER CARRIER, TOO

Population growth beyond the capacity of your original subscriber leads involves *another* problem of system expansion. ***North Subscriber Carrier*** provides for as many as ten additional stations per channel—stackable to four channels per physical pair.

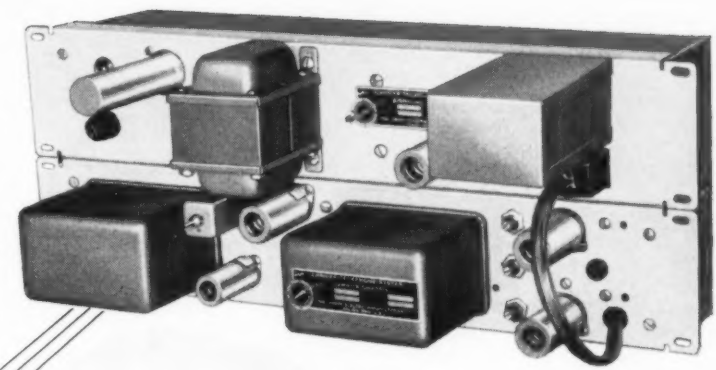
Get your copy of North's New Trunk Carrier Bulletin

NORTH

s Grow

NORTH Trunk Carrier meets your increased demand *at Low Cost*

Most telephone companies are familiar with the problems of trunking expansion brought on by growth of the communities they serve. Many of them have learned to convert this problem into profit by applying North Trunk Carrier to existing pairs at a greatly reduced cost in comparison to construction of additional physical lines. A channel of carrier is the full equivalent of an additional pair of wires, and as many as four channels can be stacked on an existing pair in addition to the trunk already in service. Available for ring-down, or duplex E & M service.

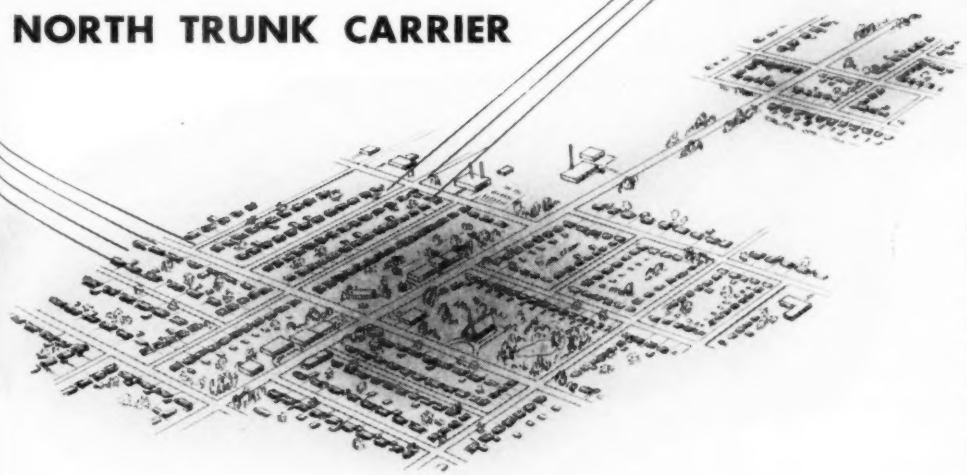


NORTH CARRIER

- Provides new trunk circuits over lines now filled to capacity, without disturbing the physical circuit.
- Provides capacity for additional revenue through increased traffic.
- Eliminates delays and lost calls resulting from crowded trunks.
- Helps to meet the demands at peak load periods with faster, better quality service.
- Provides simplest and lowest cost trunk installation, in keeping with best telephone practices.

Beat the high cost of growing —with

NORTH TRUNK CARRIER

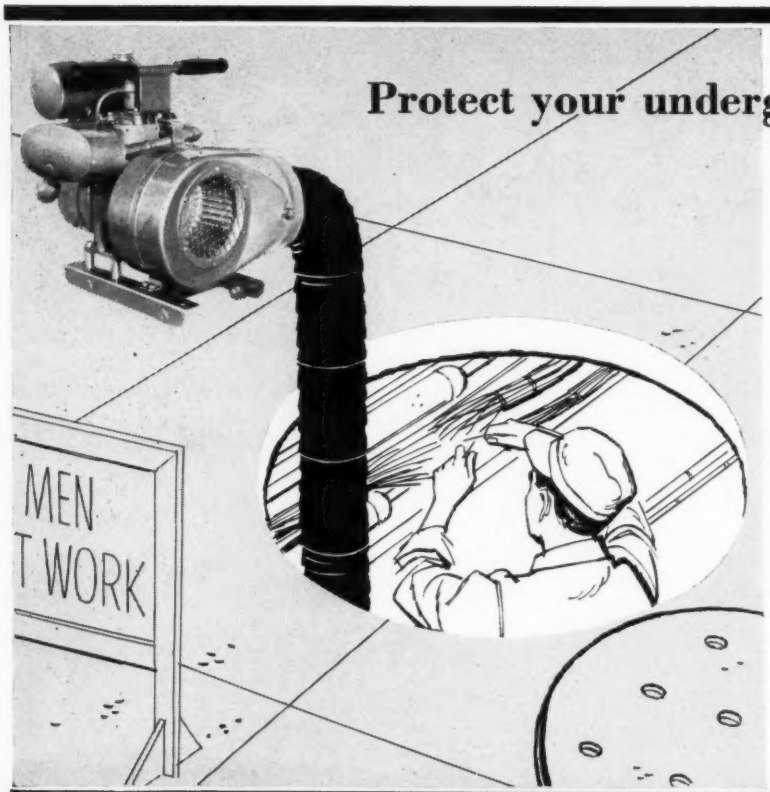


A RING-DOWN TRUNK TERMINAL is shown above. Two such identical terminals provide a carrier trunk circuit. The E&M carrier terminals are interchangeable with ring-down carrier terminals and are similar in appearance. The versatility of North Trunk Carrier offers an infinite variety of arrangements to suit any trunk system.

THE NORTH ELECTRIC MANUFACTURING COMPANY

601 South Market Street • Galion, Ohio

Automatic's pointers for plantmen and managers



Protect your underground crews with a "breath of fresh air"

A U. S. Motors gasoline blower circulates 800 cubic feet of air a minute! Blows fresh air down into the manhole, forces out bad air and toxic gases. Underground crews work better with clearer heads safe from dangerous fumes.

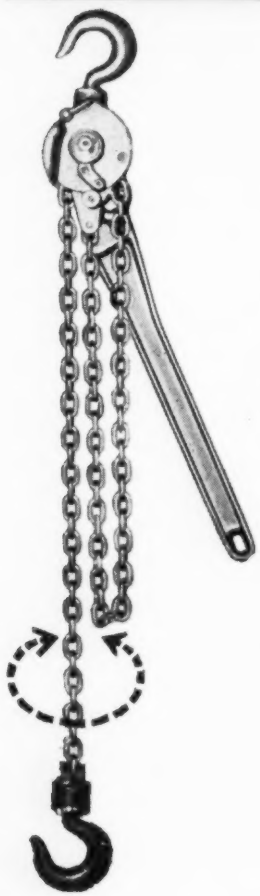
Unit runs quietly, too; new patented "silencer" on exhaust makes it an important "goodwill ambassador" in areas where quiet *must* be maintained.

Workmen like this blower's balance and the comfortable cushion grips at top for easy carrying by a single man. Big rubber-cushion mounts soak up destructive vibration, end creeping. Full one-gallon gasoline capacity is enough for 6-hours work without refueling.

The 8-inch diameter Spiratube hose attachment flows the fresh air down into the manhole; extending to 15 feet, it can be directed into low spots to assure desired air circulation. Folds flat like an accordion for easy storage.

Cat. No. 2-2706 Gasoline Blower Ea. $154.28 (f.o.b. mfg.)

2-2710 Spiratube Hose 64.00



Here's a new "twist" on hoists

The new Coffing hoist is equipped with a coil chain that will twist or wrap in any direction. This greater flexibility makes the hoist very easy to manage, no matter what the slack-pulling job. The handle can be operated on either side of the hoist, in any position, with either full or partial strokes.

Another outstanding feature of the coil chain hoist is that it can easily be converted from 1½ ton to ¾ ton capacity for lighter loads. This doubles the length of lift, gives twice the speed.

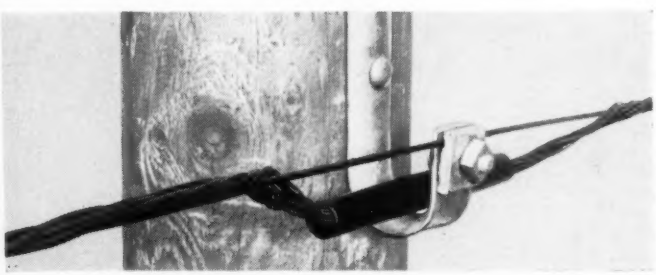
	Each
Cat. No. S-4789	**$59.00**
	(f.o.b. Chicago)

Protect distribution cable at the pole

The type of cable guard that has been used for regular plastic cable can be used also with General Cable's rural distribution cable. It offers positive protection against abrasion, where the cable is clamped to the pole support bracket. For 6-pair rural distribution cable order the ½ inch size.

If your supply of cable guards is low, call up the nearest Automatic Electric warehouse and let them help you stock up for the next construction job.

Cat. No. S-4522 $8.50 per hundred (f.o.b. Chicago)



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Lightweight . . . easy to handle and splice . . . economical to install . . . SUPERTEL keeps down costs all along the line.

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SUPERTEL has a tough and uniform vinyl outer jacket that provides resistance to sunlight, moisture, oils and chemicals. The result: far greater durability and trouble-free maintenance!

Broad availability (19, 22, and 24 A.W.G.) and up to 404 pairs in concentric and unit construction. Quads and composites are also available. Specify Type III for aerial and duct installation, and Type VII for direct earth burial installation. Specify "General Cable" first . . .

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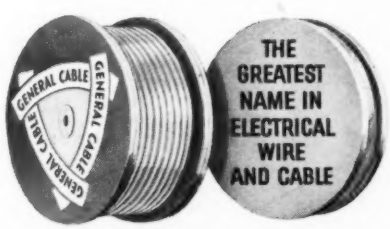

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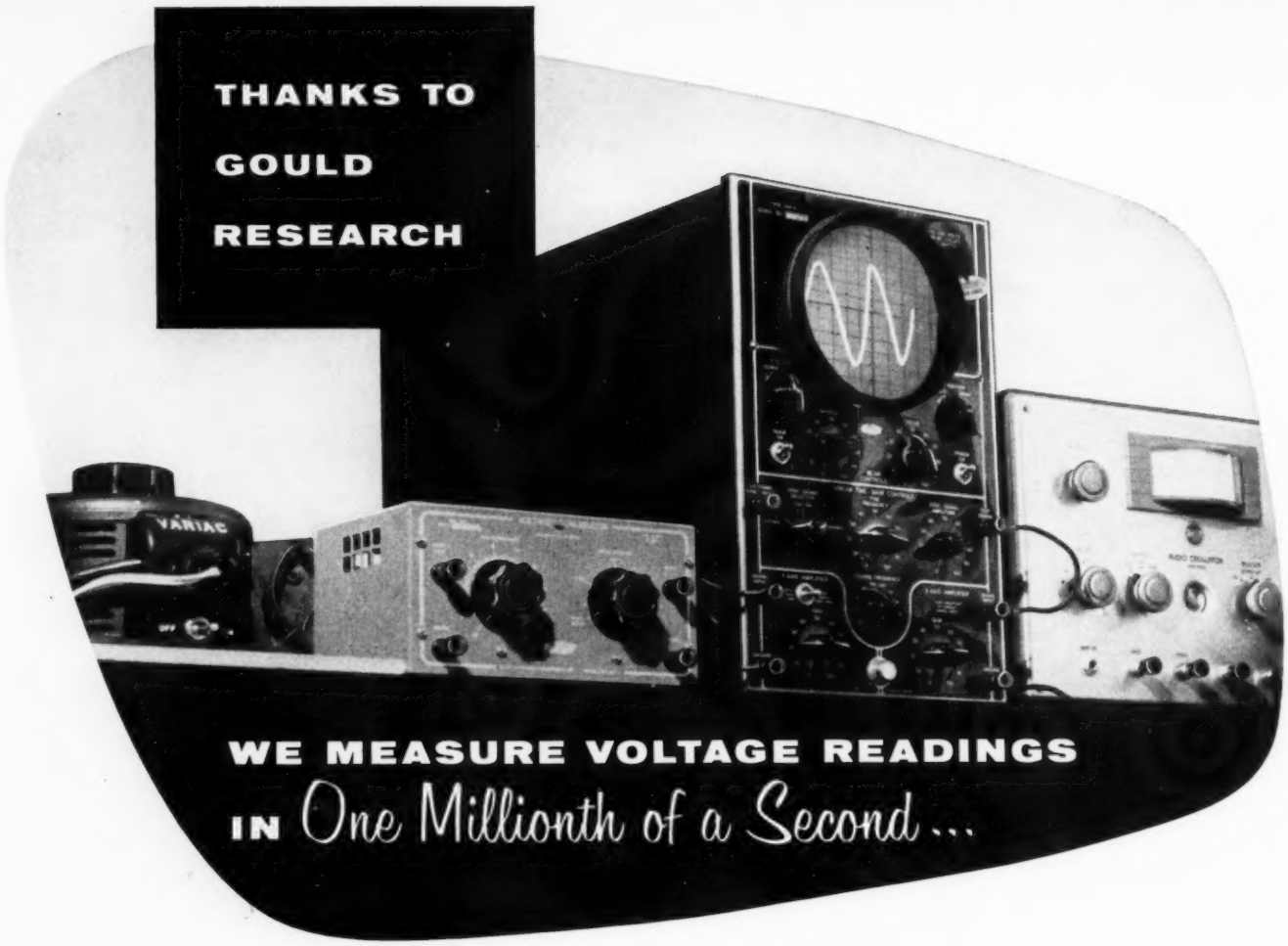

TO GIVE YOU GREATER BATTERY DEPENDABILITY!

Practically instantaneous voltage readings are made possible by the Oscillograph shown above. This important laboratory instrument has enabled Gould research technicians to 1) carry on the study of battery performance under instantaneous loads of fast circuit-breaker operation; 2) study the response of a battery to high charge rates; 3) attain more closely a perfect balance between grid design and active material.

This kind of basic research, in one of the finest battery research laboratories in the world, has given Gould Batteries service life and dependability thought impossible only a few years ago. That's why Gould Batteries are today's best battery buy. Specify GOULD!

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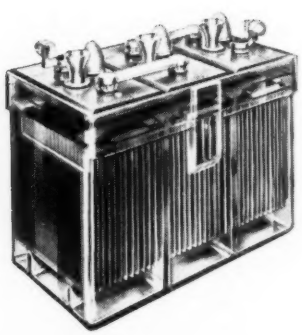

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The responsibilities of management

Management is of vital interest to every telephone company employe. If he is not a part of it, he will look for an opportunity to be.

By L. D. DENSMORE*

YOUR PRESENCE at this convention and even more your attendance and participation in the various features of the program, would indicate that you are not like the old farmer from the back country in Virginia.

A salesman was giving this old chap his best sales talk, while the prospect imposed his weight upon a fence, the utility of which had long since become impaired due to much deferred maintenance. The salesman had just the thing—a book on "How to Farm."

"You study this book and you can raise twice as much corn—your hogs will gain twice the weight on half as much feed — and work — man — you won't have to work half as hard," said the salesman. At long last the salesman had run his course and the prospect must sign on the dotted line, or no sale.

The old farmer hesitated a long time then said, "Boy, you're a right nice lad, 's a mite too bad you ain't got a working job. I reckon I don't hold much with books—but that ain't the reason I don't want airy book—The truth is I ain't farming half as well as I know how right now."

Apparently, we must be holden a mite with books and new ideas and all those things which help us, or should help us, to do a better job of providing better telephone service. We sign on the dotted line. We buy a lot of books not only when we come to these conventions but from every salesman we see.

How about the old Virginia farmer? Are we farming as well as we know how? Are we doing the very best job we know how? Are we providing the best possible telephone service to our subscribers?

How often have we attended these meetings and even taken notes on something that was said? How many times have we gone home and put into practice something we learned at conventions? To be really frank about it—not many. The truth of the matter is, there are a lot of us who without new ideas, without buying the book, are not farming as well as we know how.

Most of us are here at the expense of some good telephone company. They pay for the books we buy. This time—let's take home at least one good idea—and do something about it.

Doubtless there are many problems confronting Independent telephone companies that would well justify discussion during the time I shall impose upon you. Rather than select some current problem, I should like to make a few observations with respect to the job and person of the Telephone Manager—or in general, the executive, or broader still—management.

In our business of telephony there are a multitude of managers—There are plant managers, traffic managers, commercial managers, local managers, area managers, group managers, district managers, division managers, state managers, assistant managers, chief operators (they are managers), plant, traffic and commercial superintendents (they are managers), plant, traffic and commercial supervisors (they are managers). The general foreman, the foreman, the service supervisor, and many others, all are managers. And, of course, we must not forget the general manager, the vice president, the executive vice president, the president, and so on. Collectively they're management.

*Mr. Densmore is vice president and general manager of the Central Telephone Co. of Lincoln, Neb., and he gave this addresss at the recent convention of the Minnesota Telephone Association.

Management is of vital interest to every employe of a telephone company. Either he is subject to management, or he is a part of it. If he is not a part of it, he will look for an opportunity to be. No matter how small a part in management he may now have, there is always the hope and possibility for a greater one.

Anyone who has the responsibility for and makes decisions affecting any part of the operations of a business and includes in that the work of persons other than himself is a part of management.

It is a fair assumption that to be a "manager" or "executive" of some sort is the natural ambition of nearly everyone. Also, that most everyone is likely to take it for granted that he is qualified for the responsibility. However, this idea must be immediately discounted to the extent that very few have ever given the problem of being a manager, and the duties of management, a moment's thought or study as distinct from the problem of becoming expert at performing some kind of necessary daily duties.

There are those who carry either the title or the responsibility of management, but who have never realized the essential difference between doing and managing—who have no definite idea of what managment means—and who have never prepared nor equipped themselves for it.

Most experienced business men will agree with the statement that it is easier to raise a million dollars for a sound business purpose than it is to find a man or men with the ability to successfully administer its ramifications while it is at work. There will always be more men than managers. On the other hand, there is always

more need for managers of every kind than there are men who can qualify and perform.

The desire to occupy a managerial position is a force pushing in the right direction. It is not, however, sufficient recommendation for executive responsibility unless it is accompanied by certain personal abilities and knowledge which adds a definite constructive value to the results of the business operation. The executive or the manager must add to the situation that which does not exist in the work of the other individuals without his authority and direction.

A common mistake of many telephone companies and, for that matter, of business in general, is to assign too much value to experience and assume that, because a man has been engaged within the limits of certain business activities for a long period of time and has been relatively successful at it, he has automatically acquired executive capacity.

Too often it is found the man's success has been made possible only by the circumstances and surroundings in which he worked. Some people do not learn from experience. They have it, but they do not make anything of it. The events through which they pass may leave them with certain knowledge but no increase in wisdom. First hand knowledge of the intricacies of business transactions or operations is a valuable personal asset but is, of itself, no indication of executive ability. A long period of routine experience, or in the performance of a technical function, has a tendency to form mental and personal habits which are antagonistic to the growth of executive capacity. The most important thing about experience is the attitude of the individual toward it—how much and what kind of material he has been able to make out of it and add it to himself for future use.

It would be futile to attempt a full discussion on the fundamentals of executive responsibility and management. Perhaps it might be more useful to mention the qualities which are considered to be an essential part of executive or managerial ability.

Perhaps those of us here who are a part of management might take a mental inventory as we go along to see how many of the essential qualities we really have. If there is anyone here not now a part of management and is looking for an opportunity to be, he can visualize the kind of yardstick that either management or business circumstance is continuously placing down his back.

Business problems are always problems of people—the people in the business and the people with whom business is done. It is the quality of the individual in the business which measures the quality of the business itself. If people and what they do are the principal problem of business, then it naturally follows that the kind of a person and what he does, is the most important factor in management.

There are certain business and personal qualities necessary for proficiency. It is an interesting and useful observation that those who succeed in management have displayed many common qualities. There are apparently some so important that any considerable lack or variation in them seriously affects results. While every human attribute is a factor and all good personal qualities are desirable, they are not necessarily controlling.

First of all, a manager should be a normal, healthy, intelligent, ambitious, honest individual of real ability and with a reasonably good personality, supported by necessary knowledge and experience and a willingness to do whatever is necessary to advance himself in the business of assuming executive responsibility.

What would you say are the 10 most important qualifications of an executive or manager? We might consider the following to be the most important:

(1) Integrity.
(2) Ability to get along with others.
(3) Intellectual ability.
(4) High degree of identification with the company.
(5) Firmness.
(6) Ambition.
(7) Frankness.
(8) Objectivity.
(9) Health.
(10) A happy home.

In addition to these qualities, would you agree that he should have the ability to organize, instruct, direct, supervise, serve, use good judgment, size up subordinates, stand pressure, choose an objective, use principles, think objectively, and make money.

There is the widest use and greatest need for the following eight specific personal qualities and abilities in the business of management:

(1) An interest in and understanding of people.
(2) A necessary personal strength.
(3) Initiative or the will to action.
(4) Use of common sense or good judgment.
(5) An inquiring mind.
(6) An understanding of business procedures, purposes and relationships.
(7) Thinking objectively.
(8) Thinking that is grounded in general principles and fundamental laws.

FIRST—*An Interest in and Understanding of People.* To properly conduct a business organization requires comprehension of personal motives and relationships.

A manager must realize he is not going to do the job alone and so he must be able to value, control, and develop the important element of performance represented by the people in the business. His own success and that of the business depends upon what they do and how they do it. To get the job done requires general cooperation in the form of a working partnership.

A business is also a social structure. It contains as many individuals and group social problems as it does economic and monetary problems. All employes need the interest and recognition of management, not only as a vital part of the business operation but as human beings who have feelings and sentiments not controlled by logic.

SECOND—*A Necessary Personal Strength.* Consideration and understanding of individual problems must go hand-in-hand with a willingness to assume authority and meet issues when necessary. There can be no successful cooperation without both leadership and discipline. There must be strength in the determination to do things and get things done. There must be courage to meet whatever personal and business emergencies arise. There must be stability to stand the pressure of people and circumstances which are increasingly attempting to push or lead a man in a position of authority away from sound fundamental principles and practices.

The best executive personality should be strong but genial; not so strong, however, that workers would be afraid, and not so genial they would expect slackness or any other business weakness to be overlooked.

THIRD—*Initiative or the Will to Action.* Initiative is the energy and capacity to get into action without being told. To be fruitful it must be the right action. It requires getting into action —doing—and being right.

The greatest struggle in life and in business is to overcome the inertia common to most individuals who would rather talk about yesterday than do anything today. The man who wants to be manager is faced with the necessity of first driving himself and then leading others into action.

FOURTH—*Use of Common Sense or Good Judgment.* Many people are grown up physically but not mentally. There may be instability, a running-to-extremes of thought and emotion or action. This can manifest itself in violent likes and dislikes; extremes of friendliness or antagonism toward business associates and subordinates; anxiety for

(Please turn to page 42)

by FRANCIS X. WELCH WASHINGTON EDITOR

Senate committee recommends utilities get 50 per cent of depreciated cost of relocating facilities along federal aid highways. Indiana co-op pays off REA.... Plans for private financing.

LAST WEEK in this department it was stated that the Senate Public Works Committee had decided to allow public utilities up to 25 per cent of its depreciation cost of relocated facilities made necessary by highway construction. This was on the basis of earlier information. Actually, the bill turned out to be 100 per cent better than that for the utilities. They will be allowed up to 50 per cent of the depreciated cost of relocated facilities due to construction of federal aid highways. They will receive this amount—assuming that the bill passes in that form, which is still very doubtful—in every case where states themselves do not make compensation to utilities for highway relocation up to that amount.

Just by way of getting the Senate committee bill straight this time, here is the actual text of the proposed amendment to the Federal Roads Act (S 1048) as reported to the Senate:

"Sec. 11. (a) Subject to the conditions contained in this section 50 per centum of the cost of relocation of utility facilities necessitated by the construction of a project on the federal primary, secondary, or interstate systems in which federal funds have participated, may be paid from federal funds whenever under the laws or practice of the state where the project is being constructed the entire relocation cost is required to be borne by the utility.

"(b) For the purposes of this section the term 'utility' shall include publicly, privately, and cooperatively owned utilities.

"(c) For the purposes of this section, the term 'cost of relocation' shall include the entire amount paid by such utility properly attributable to such relocation after deducting therefrom any increase in the value of the new facility and any salvage value derived from the old facility.

"(d) No more than 2 per centum of all sums apportioned to any state for any fiscal year for expenditure on such systems may be expended under the provisions of this section.

"(e) Any utility required to relocate a facility within the terms of this section shall have a right to payment out of federal funds as in this section provided. The secretary is authorized to make such payments on the basis of an agreement approved by him, entered into between the state highway department and the utility, which agreement shall contain an estimate or an agreed price of the cost of relocation. In lieu of such agreement the utility may file with the state highway department a certified statement of the cost of relocation subject to the approval of the state highway department. The state highway department shall transmit such statement to the secretary with the final voucher for approval by the secretary.

"(f) Nothing in this section shall be deemed to preclude reimbursement to states of the federal share of the state's costs in connection with the relocation of utility facilities where a portion of the relocation cost is required by law or practice to be borne by the state."

It will be seen from the foregoing, that the committee bill would be of considerable benefit—if enacted—to all kinds of utilities (gas, electric, water sewage, transit, and others), as well as telephone companies. It would also make no distinction between publicly owned, privately owned, or cooperative utilities. The cost of relocation compensation under this bill cannot exceed 2 per cent of the entire contribution to any state for highway construction. But it is believed that that is a fairly workable margin, and that utilities of all kinds should be able to get much needed relief if the bill becomes law with this provision intact.

There is much question, however, about possible changes during the forthcoming battle in the House of Representatives. The U. S. Senate was slugging it out along political lines, this week. By the time these lines are read, the Senate will probably have passed the bill, in either the form reported by the Democratically controlled committee or in the form desired by the Eisenhower administration. The fight between the Republicans and Democrats on this bill has nothing to do with utility relocation expense. It is a fight over the method of financing the highway program. There is no reason why the relocation expense provision could not remain unchanged under either version (the Democratic financing plan or the Republican financing plan). But there is always the risk, during a hassle of this sort, that some particular provision such as utility relocation might accidentally get dropped, or emasculated, without much notice because of the over-all interest in court issues. So, if the utility companies want the highway relocation relief provision, they will have to continue to watch, work, and pray—especially in the House of Representatives.

Will Co-ops Return to Private Enterprise?

When the Boone County Rural Electric Membership Corp. of Lebanon, Ind., paid off its REA loan this spring, it received a lot of publicity with Vice President Nixon and several high government officials taking part in the paying off ceremonies. But what may well be the *real* significance of the event received very little notice. Here is an electric cooperative that, in effect, has substituted *private* financing for *government* (REA loans) financing!

When the Hoover Commission recommended that REA should study ways to bring private financing into the REA picture, a terrific howl went up from rural electric leaders. Yet, here was an REA borrower that was doing what many people said would never be done.

Paul Martin, president of the Boone County cooperative, said that they had given a good deal of thought to the future before they cut loose from Uncle Sam. He said he hoped that revenues of the business would be sufficient to maintain the system and provide qual-

ity service without the need of additional financing. However, in the event more financing becomes necessary, the cooperative would raise it locally. In view of the important utility function the cooperative is performing, Mr. Martin said he felt that they would have no problem in getting local support.

It is interesting that the Boone County cooperative, which now is pioneering a new phase in REA financing, 20 years ago was a pioneer in getting an REA loan. It received one of the first three loans ever made by REA.

Now that it has paid off at the very earliest possible date (under the terms of its loan) its obligation to the federal government, this cooperative seems perfectly willing to embrace conventional enterprise financing, in its local area, for future needs.

How many more REA cooperatives will follow suit when their loans are paid up on time or ahead of time? It will be interesting to watch. If our privately owned enterprise system has all the advantages which we claim for it, there is no reason why these cooperatives will not gravitate normally into the orbit of our regular business economy. It may be that, like little Bo-Peep's sheep, they will all come home, if we leave them alone. And maybe, like the Boone County cooperative, they will be wagging their tails behind them—confident of the soundness of their own business, as well as looking forward to the benefits to be derived from embracing the same financial set-up as the rest of their local communities, on an enterprise basis.

Now that REA has turned its 20th birthday, more and more of these loans will be maturing and terminating. We will have an opportunity, then, to see whether the lure of federal financial wetnursing is incurable—or whether these cooperatives are eager for a chance to show what they can do, on their own, in the American business world.

U. S. Chamber Opposes Wage Change Employment Relations

The battle to raise the minimum hourly wage under the Fair Labor Standards Act moved over into the House of Representatives, after the winding up of the hearings before the Senate Labor Sub-committee. The efforts of the United States Independent Telephone Association (USITA) to retain the telephone industry's present exemption of operators wages, at exchanges up to 750 stations, has already been discussed in this department. Chairman McFarlin of USITA's Employment Relations Committee did a fine job of giving the Independent industry's viewpoint to the Senate Subcommittee, headed by Senator Douglas (D., Ill.).

But there are other aspects of the legislature which make it quite controversial—notably the effort to place retail and service business with certain volumes of sales under minimum coverage. These retail stores are now exempt just as the small telephone exchange operator's wages are exempt. So it is of interest to Independent companies to note that so much argument has been generated over the retail store wage proposal, that the bill (to increase the minimum from 75 cents to 90 cents or $1.00) may be stymied as far as final action is concerned.

Dr. Emerson P. Schmidt, Director of Economic Research for the national chamber of Commerce, strongly urged that existing retail and service exemptions remain untouched. It was Dr. Schmidt's second appearance before the Senate Labor and Public Welfare Sub-committee to testify on proposed wage-hour legislation.

Two misconceptions are involved in proposals to remove the exemptions from retail and service establishments, Dr. Schmidt said. The first, he continued, is that "multistate enterprises are competing in interstate commerce in an economic sense" and the other is that "stores which are 'big' can afford to adjust their wage bills without disruptive effects." Dr. Schmidt reiterated earlier testimony that stores in interstate chains or distribution are "no less local in character than single stores."

"Wage and hour practices are determined by prevailing local conditions," he said, "and wages and hours, not ownership or control, are the issues here." "Retail stores," Dr. Schmidt asserted, "cannot raise wages at will just because they're 'big.' It would seem that the recent trend in distribution is toward increased volume with lower profit margins. In such a situation, a slight adjustment in costs can have a disruptive effect out of proportion to the slight wage increase." The proper guide for judging a minimum wage increase is the ability to absorb such an increase, the chamber witness said.

"If a minimum wage is set higher than a level to which the industries most affected can adjust," he testified, "we have not helped the low-paid workers at all. Low-paid workers who are covered by the law will have been barred from jobs by members of Congress. Or, if a round of inflation permits these workers to be kept on the job, low-paid workers not covered by the law will suffer a reduction in their real income and others will find their bigger pay envelopes offset by bigger grocery, and other bills."

Uncle Sam — Big Business Man

That the federal government's holdings in land and facilities are extensive is well known. What hasn't been known for long, or very accurately, is where all these holdings are and how much they are worth—or cost the federal government. The General Services Administration (GSA) has completed an inventory and submitted a report to Congress at the request of the Senate Appropriations Committee.

The government, besides owning 21.3 per cent of the area of the continental United States owns: (1) Gas Lines; (2) electric power systems; (3) railroads; (4) telephone lines; and (5) breakwaters, docks and jetties; all purchased and operated or maintained with the taxpayers' money. All federal property exclusive of "trust" properties and the public domain, was purchased at 30.2 billion dollars. The inventory covers all real property owned or acquired up to December, 1953. Additions are not unlikely. The GSA states that no report of this magnitude has ever been attempted and some inaccuracies have undoubtedly crept into its compilation. Refinements are to be made.

The government owns 14.4 billion dollars in buildings and 13.6 billion dollars in "structures and facilities," according to the report. Interior, AEC, GSA, and TVA, in that order, trail only the Defense Department (all military installations) in the cost of real property under their respective agencies. Defense, 18.8 billion dollars; Interior, $3,260,000,000; AEC, $1,840,000,000; GSA, $1.3 billion; TVA, $1,150,000,000. In contrast, the Post Office Department's 3,000-odd local post offices, a poor ninth, aggregate 468 million dollars. Third place in the "cost-of-federal-land-by-predominant usage" goes to "power development" (245 million dollars). First and second places are held by "flood control and navigation" and "military," respectively.

Cost-of-federal-structures-and-facilities list is headed by "power development," with a federal expenditure totaling $2,701,000,000. An additional category cited as "electrical distribution systems" accounts for a federal expenditure of $1,017,000,000. Water systems, 817 million dollars; heating systems, $664,100,000; and communications systems (including telephone, telegraph, and microwave), $206,300,000. Under the power development heading the cost of facilities is broken down further to three agencies: Interior, 947 million dollars; TVA, 927 million dollars; Army Engineers, 827 million

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Corrosion of underground cables

(Electrolysis)

By HAROLD B. McKAY

PART IV

IN THE PREVIOUS chapters in this series (TELEPHONY, May 7, 14 and 21), it was shown that a positive voltage condition on a cable sheath, which could cause corrosion, could be corrected by connecting negative voltage to the cable from the central office battery or a rectifier in order to counteract the condition.

Magnesium Anodes

It is also possible to cause the required reversal of polarity by making the cable sheath itself become part of a natural battery. To make such a battery, another plate is necessary. Any metal which is lower on the electromotive force table may be used. In actual practice, zinc, aluminum and magnesium have been tried. Today, magnesium is probably among the most promising. This metal produces the greatest voltage when measured against lead. It is fabricated into anodes and ribbon for purposes of combatting corrosion. The fixed anodes are made of a core which may be a piece of iron pipe or rod, surrounded by a casting of several pounds of magnesium.

The ribbon is a strip of magnesium which is extruded around an iron wire. Because with either type, the magnesium will be consumed in the course of time, the iron center is necessary to maintain conductivity. For instance, in the case of the ribbon, it may corrode completely away at some point underground where the corrosion is greatest. This would open the circuit and the protection would be lost.

In actual practice, in duct installations, this iron wire is used to pull the magnesium a foot or two at a time between manholes as the ribbon corrodes. This brings a fresh part of the ribbon into the corrosion area as it is needed.

In a magnesium anode installation, either the ribbon or the large anodes are buried at some distance from the cable, but connected or bonded metallically to the cable. In selecting the distance, the objective is to provide even distribution of the earth currents between the cable and the anodes. If too close, the earth currents would flow in short paths, and would enter the cable at concentrated small points or areas, without giving protection to points in between. If too far away, the increased soil resistance might reduce the effectiveness of the whole installation.

Battery Action

In operation, the magnesium anodes become the negative pole of a battery. The cable sheath is the positive pole. The two are connected together or short circuited by a bonding wire which is soldered or welded, or otherwise connected by a dry joint to the cable and anode. As described earlier, a current will circulate, through the earth, from one terminal to the other, than back through the bonding wire.

Note that while the cable is positive with respect to the magnesium, the current which leaves the cable to go to the magnesium, does so over a metallic connection where no corrosion can take place. The return current through the earth corrodes away the magnesium instead of the cable. This is because at the point on the cable where the earth current affects it, the direction of current will have been reversed. Without the magnesium anode, the cable itself would pass current to earth at some point, and at this point corrosion would occur. In actual installations of this type, voltage measurements taken between the cable sheath and ground show that the polarity

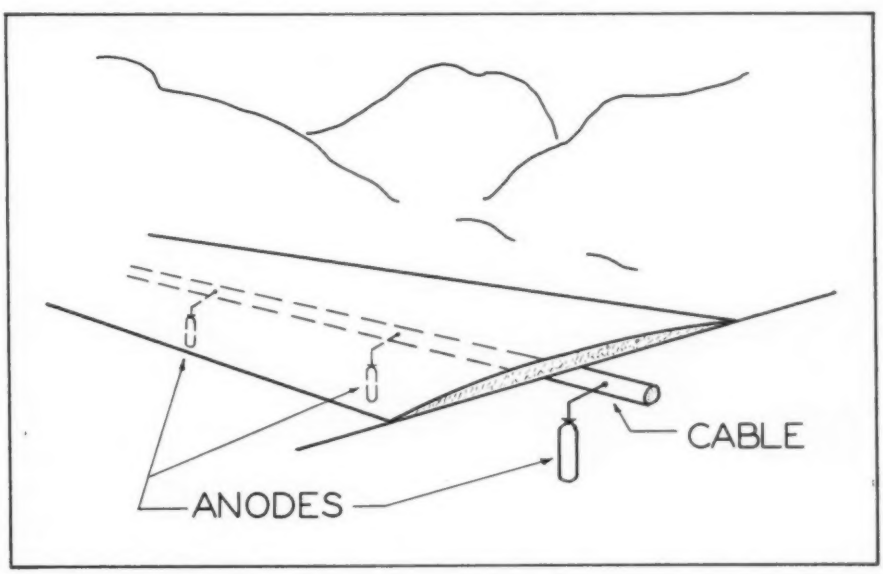


Fig. 4.1. Electrolysis protection by means of magnesium anodes is shown here. No rectifier or other power source is used because magnesium and lead in the ground form a battery cell which in effect takes the place of the rectifier used on forced drainage systems. The cable is connected or bonded to the anodes at frequent intervals. In time the anodes will corrode away and need replacing, but the cable will not.

of the cable gradually reverses after anodes are put in place.

Of course, this method of protection consumes the magnesium anodes, and they must be replaced in the course of time. For that reason, this system of protection, like others, must be inspected and tested as required to make sure it is still functioning. The actual life of the anodes can be estimated, if the current flow is known. However, the current flow may vary with the seasons, and will vary as a protective film becomes built up around the cable. Remember, also, that changes or additions to the cable plant or to water pipes, gas pipes, steel building foundations or anything else metallic in the ground near the cable, can also completely change an electrolysis picture.

The use of magnesium or similar anodes is limited by the voltage they can deliver. The available potential between lead and magnesium is about one volt. This may not be enough to force a change in current flow if the soil resistance is high. Fortunately, electrolysis is usually associated with areas of low soil resistance, because naturally the most earth current flows where there is low resistance.

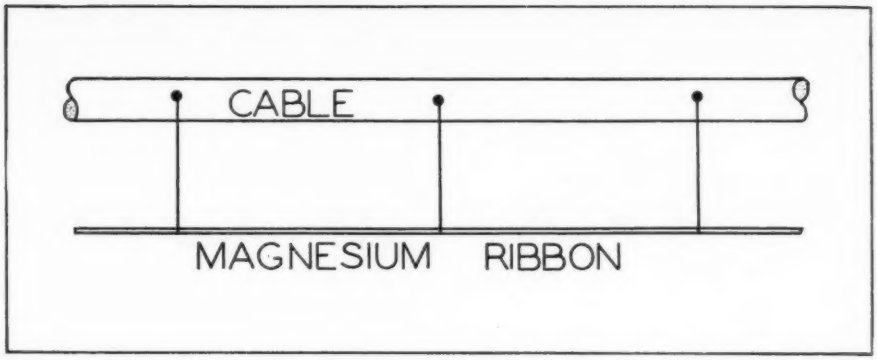


Fig. 4.2. Magnesium ribbon may be plowed into the ground near a cable run and connected to it at frequent intervals. In duct runs the ribbon is placed in a duct adjacent to the cable. If electrolysis currents are present, the magnesium will corrode instead of the cable because the cable will acquire the negative voltage of the magnesium, with respect to ground.

Many Anodes

Therefore, the magnesium anodes work in many cases, where one volt or less of corrective voltage is needed. In addition, the use of many anodes along a cable run distributes the available voltage, and in effect reduces the necessity for the current to run long distances through the soil. When the magnesium ribbon is used with buried cables, it is usually plowed into the ground a few feet from the cable, and bonded to the cable at frequent intervals.

While the electro-chemical principles involved in corrosion are not new discoveries (there is evidence that the Macedonians of 20 centuries ago had a battery), it is only recently that full use is being made of this knowledge. Furthermore, the telephone industry seems to be behind the rest of the field in making use of these principles.

For example, most of the literature available on this subject relates to oil, water or gas pipes, or power company cable, with but few references to telephone cable. Actually, the various means of correction of electrolysis conditions which have been mentioned here have long been in use by other industries. The "forced drainage" by means of rectifiers has been recently used to keep the bottoms from rusting out of our "mothball fleets" of ships which were left over from World War II. The vessels are wired together for electrical contact, and connected to negative dc voltage. The positive or anode side of this current supply is in the bay in which the vessels float. The direction of current being into, rather than away from the hulls, the ships do not rust or corrode.

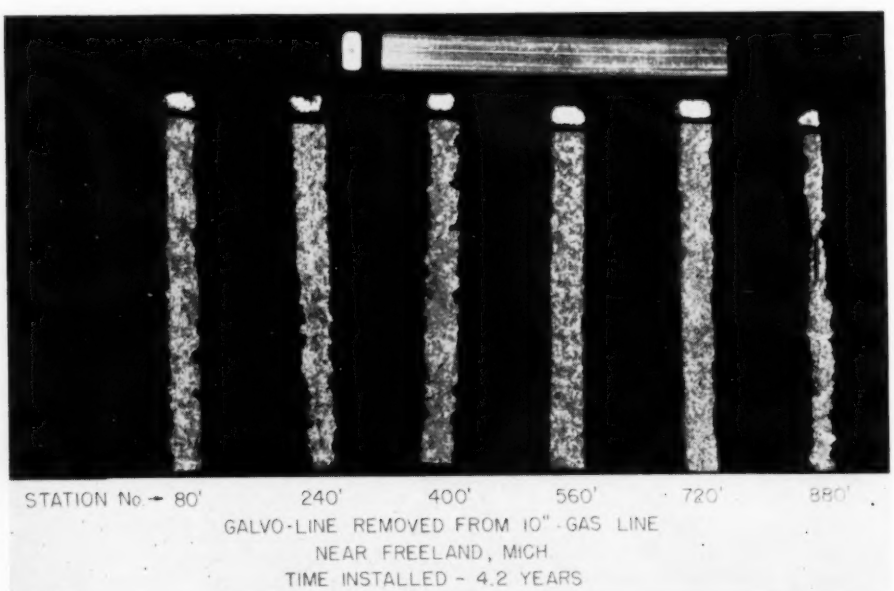
Magnesium anodes which furnish their own current are used in another maritime application. Tugboats with metal hulls may have blocks of magnesium fastened beneath the waterline. These have the same effect as that described on telephone cable. By keeping the current flow in the right direction, corrosion of the ship's hull is avoided.

Household water heaters are now being equipped with magnesium rods to prevent corrosion and leaks in the tank.

Non-Metallic Cable

In addition to the electrical methods of stopping corrosion, other users of underground plant have placed insulating materials on their metallic structures. Pipes have been coated with various compounds and wrappings which are designed to insulate the metal from the surrounding earth. Some pipe is manufactured with these substances in place; some compounds are designed for field application. In general these materials do what they are supposed to do, and while the insulating layer is intact, corrosion does not occur, but tiny "holidays" or bare spots where the insulation does not cover can quickly corrode through.

In the telephone industry, the equivalent remedy is plastic sheathed cable. Some companies make it a policy to place a section of this type of cable when repeated cable failures occur due to corrosion.



When a cable or pipe installation is protected with electrolysis counter-measures, it is the anode which corrodes rather than the company's plant. Here is what happened to a magnesium ribbon which was used to protect a pipe. The horizontal piece at the top is what the ribbon looked like before it was corroded. (Photo courtesy, Dow Chemical Co.)

Duct Surveys

The foregoing information has been of a general nature, and is applicable to different underground metallic struc-

tures. The construction used by telephone and power companies, whereby ducts are used to convey the cable between manholes, presents a rather special kind of problem. This problem is different from a cross-country pipe line in several respects, such as the following:

(1) Voltage measurements on the cable sheath itself can usually be made only at manholes, instead of at random locations.

(2) Readings at manholes may not be the same as at inaccessible locations between holes.

(3) Asphalt paving of city streets may make it difficult to get accurate voltage or resistance readings to ground outside of the manhole.

(4) Bringing in power for a rectifier installation may be a problem if no low-voltage power is in the manhole or nearby.

(5) Placing bond wires to other structures, or the placing of anodes, may involve expensive street-opening operations.

In addition to the above, manholes present a series of minor difficulties to measurement techniques.

For instance, if there is water in the manhole that is deep enough to submerge part of the rack holding the cable, the galvanizing (zinc) on this rack will develop a voltage of its own which will interfere with any readings being taken. If the rack is carrying cable one situation results, and if it is not carrying cable and thus not directly in contact with lead, a different condition can occur.

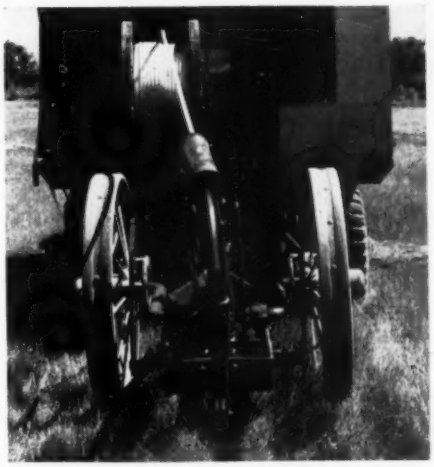
Also, the sump or lowest part of the manhole would seem to be the best place from which to take a ground measurement, and so it is from a standpoint of the good contact obtained through the dampness at this point. However, wire clippings may have lain here and corroded at some time in the past, and the concrete may contain copper salts which can affect voltage readings.

These problems in connection with manhole measurements can become so aggravating that it becomes simpler to drill a small hole through the asphalt paving outside of the manhole and make connection by means of a half-cell for a ground.

When a ground connection is thus established, a small hole is made in the asphalt, or connection is made over a crack in the paving. In either case, water is poured in it to make connection to the earth underneath, or to the concrete below the asphalt. Connections to concrete pavement may be made directly at any point by wetting the spot first.

Problems

Many things may happen to a buried



When used to protect buried cable, magnesium ribbon may be plowed into the ground with regular cable-laying equipment. The cable and the ribbon are electrically connected together at intervals with bonding wires. (Photo courtesy, Dow Chemical Co.)

duct run between manholes. The earth may settle because of washed away soil or crushing from above, with resulting damage to the duct. Fluids from sewers or seepage may enter damaged sections, bringing alkaline chemicals from cement joints in the duct itself or from other sources.

These conditions may cause corrosion to occur in the region of the damage. This corrosion is " local action." That is, both the positive and negative poles of the corroding current are within a few inches or a few feet of each other. It is like the example shown earlier, where a cable runs through two different types of soil and forms a battery. Because this occurs in a small space,

Splicer's Helper C. L. HASH holds a duct slug which is used to make contact with the inside of the duct for measurement purposes. It is made of a piece of lead sheathing filled with compound. The wooden center section is a regular duct rod.

readings of voltage on the cable sheath taken at a manhole may be of no value, because it is too far from the actual trouble. The voltage on the sheath may reverse more than once between manholes.

Therefore, in order to understand what is occuring in a section, a duct survey is usually made. Such a survey can be made anywhere a spare duct is available, paralleling one containing the cable. This applies to non-metallic ducts only; it cannot be made where iron pipe is used.

The duct survey is based upon the assumption that what happens to one duct in a run usually affects the others in the same run. That is, if earth movement causes one duct to crack and leak, others alongside of it will probably be broken also. This is particularly true of tile ducts in which several openings are formed in each tile. However, it may occur anywhere that several ducts lie close together.

Duct Slug

To determine the condition between manholes, a "duct slug" is shoved by means of duct rods, or pulled with a rope, through a spare duct from one manhole to the next. The duct slug is made of a sleeve, or piece of cable armor 1 foot long which has been formed in to place around a section of duct rod. It may be filled with tar or other compound if necessary to hold it to the wooden duct rod and provide uniform weight. A wire is connected to it which is covered with good insulation and which will reach from one manhole to the next.

This slug will be used to make contact with the walls of the duct for the purpose of taking readings at intervals all the way between manholes. The reading will depend somewhat on contact made by the slug. Therefore, if more than one slug is used at different times, there is an advantage in making them identical as far as size and weight is concerned, so readings will be standard.

As the slug is pushed or pulled through the duct, a record should be kept in terms of the number of feet from the manhole, every time a reading is taken. The measurements made usually are (1) the voltage appearing between the slug and the cable armor. This is made with an extremely sensitive millivoltmeter; (2) the slug leakage current, which is measured by a milliammeter connected between the cable and the slug; (3) the slug to earth resistance, measured with an ohmmeter, between the slug and a connection to the earth, or the cable armor, which for this purpose may be

regarded as having no different resistance than the earth.

Resistance Readings

The resistance readings, if made with a dc ohmmeter will be altered by the effect of any potential existing between the points where the reading is made.

For example, if one-half volt of potential exists between the cable and the slug, and the ohmmeter is powered by a 1½ volt battery, the one-half volt of earth potential will either add or subtract from the reading in ohms on the meter, and give a false reading. This may be corrected by taking a reading in each direction — that is, make one reading, then reverse the meter leads and make another reading, then average them out for the true reading. Meters are manufactured which contain reversing switches for this purpose, or a small panel with a few switches can be built up which will permit switching each of the meters required in these tests.

Such a panel should provide for switching the voltmeter, ammeter, or ohmmeter in and out of the circuit composed of wires going to the duct slug, and the cable and the half-cell or other ground connections. In cases where observed currents are variable, and one does not have separate meters for each leg of the circuit, it is essential that readings be made as nearly simultaneously as possible. Also, some currents may change frequently in polarity.

(Polarization effects, as explained in part one, may cause the reading of an ohmmeter to fall off rapidly as a film builds up on the cable or other electrode, caused by the battery in the ohmmeter. Therefore, the tester must be prepared to get the first reading at once, as soon as connections are made.)

For cases like this, the small switch panel will prove invaluable for taking readings quickly, although the matter of reversing polarity can be handled by the use of zero-center meters.

Ground Megger

The ground megger method mentioned earlier may also be used in duct measurements if the megger has low resistance scales, and is in fact the most desirable method.

The value of the results taken from such measurements in ducts depends upon the use to which they are put, and this again depends largely upon the experience and judgement of someone.

If the readings taken along a duct are recorded as they are made and later transcribed into graph form, the result will be an electrical "picture" of the length of the duct. At first glance, it may indicate a broken section or something that suggests digging for.

In any event certain readings will always indicate that further attention is warranted. A current flow of two or three milliamperes usually suggests that protective measures may be needed but currents of less than one-half milliampere may not be worth tracking down, on the theory that it would be years before the cable would fail at this rate. Several factors may enter into a decision to clear up potential failures before they happen, such as the cost, importance of the circuits, etc. But this is a matter for humans to decide; the meters will only tell you that current is flowing.

The resistance readings obtained are regarded by some as the more important of the tests made. This opinion comes from the fact that a point of low resistance is a point where most current can flow. Such a point is a likely spot for corrosion to occur.

Thus, while the voltage readings will show if the cable is positive, and by how much, even a high positive condition on a cable would cause little or no corrosion if the resistance to ground is high. In other words, a given voltage in any circuit is in effect neutralized if it is prevented from acting by being held in place by high resistance. However, in making duct surveys, it should be remembered that these conditions may change between wet and dry weather, and may be different between upper and lower ducts in the same run. (The lower ducts are more likely to be full of water or mud.)

Three Readings

Thus the current, voltage and resistance measurements made in a duct survey all help form the picture of what is happening underground. Ordinarily one might expect that only two readings, rather than three, would be necessary as long as Ohm's law is still in effect, but three readings permit each one to be checked against the others for greater accuracy.

In addition to these tests made inside of the ducts it is sometimes desirable to determine the direction of earth currents from foreign sources which might be crossing the cable at some distance between the two manholes. This can be determined by placing half-cells at different points along the pavement, first over the cable, then to one side of the cable then the other. Two or three half-cells can be used with a switch panel so that readings may be quickly taken each side of the cable. Such readings can be made between the surface contacts, or from surface to cable or surface to slug. Careful analysis of the resulting readings will reveal the patterns of the earth currents.

When two or more half-cells are to be used for simultaneous readings, it is a good idea to check the voltage of one against the other, so that if they are unequal (which they usually are), corrective figures may be allowed in the calculations. To test two half-cells, they may be placed in a tray of conducting fiuid, and the voltage between them measured. If they are equal, no voltage will appear; if unequal, the resulting voltage must be allowed for in measurements made with the two cells in the circuit. The voltage of half-cells should be checked periodically, as it changes as the cells age.

Providing protection for electrolysis conditions in ducts follows the same procedure as in other locations, subject to some limitations. A rectifier may not be satisfactory in a manhole if it gets too hot, or if the manhole fills up with water from time to time, or if gas is present.

The problem of an anode for a forced drainage system, whether rectifier or central office battery, may be simplified however. Instead of digging up the street at intervals to bury graphite anodes and connecting them to the cable, an old piece of defective cable may be dragged into a vacant duct and connected to the positive side of the drainage system. It is interesting to note that as telephone and power companies use their scrap cable for this purpose, the oil companies use scrap pipe for the same purpose. Indeed, tables have been worked out to show how many tons of scrap pipe it takes to provide protection for a given number of years.

In using scrap for the anode, of course, the scrap, whether it be pipe or cable, ultimately corrodes away and must be replaced. Here, again, is evidence that an electrolysis problem always remains, and must have routine inspection on a regular basis.

If magnesium is used for protection, the ribbon form is used, and it is placed in a spare duct, with the ends connected to the cable at the manholes. As explained earlier, this ribbon will corrode at the spot where the duct trouble exists, but the iron wire contained in it preserves electrical continuity. As one spot corrodes a new spot may be brought into service, if a coil of slack was left in the manhole when it was installed.

* * * *

The next chapter in this series will discuss some of the considerations involved in new underground construction.

today's Highlights

of-finance-taxes-business trends

by Willard F. Stanley

INTERNATIONAL AFFAIRS. Winds from the Far East (except out Vietnam way) are blowing milder these days. "East is east and west is west," but it looks as if Kipling was wrong about their never meeting. Whether the Reds' new brain waves aim at peace or only propaganda, our policy seems sensible in saying "All right, let's talk and hear what the wild brain waves are saying." Will Rogers used to say we never lost a war or won a conference, but maybe we can hold this one to a tie. Foreign affairs remain delicately poised on a tight-rope — a position favorable to our economy — with enough latent threats to assure our continued defense build-up and consequent continued spending, but not enough tension to create uncertainties flowing from anxiety.

Perhaps recent evidence of atom blast devastation may reduce belligerency and thus contribute toward peaceful solution of world problems. To introduce a lighter note, firing atom blasts seems to require such special experience that it's rumored the government may get Godfrey to fire the next one.

* * * *

THE BUSINESS PICTURE. This still continues a pleasing one. Survey of one of the leading New York banks, for May, indicates that developments bode well for the immediate future. Many leading statistical indices continue steady or up, and majority opinion seems to point to 1955 being a record year, both for production and earnings. Tabulation by another New York bank of close to a thousand corporations showed increased net income for the first 1955 quarter over that quarter the year before of over 2-1/2 billion dollars, or over 25 per cent. The ratio of increases to decreases ran something like 3 to 1.

* * * *

INTEREST RATES. Short-term interest rates may trend somewhat upward if business shows "boom" propensities. Credit demands continue large, but the fundamental factor should continue to be federal government policy. Chase Manhattan Bank's April survey concludes its discussion of money market trends by saying ". . . so long as the economy is below full capacity (the survey stated earlier that this is the case) and the price level remains stable (which seems probable) a (government) policy of active restraint (of credit) like that in early 1953 seems most unlikely."

More important than the short-term interest rates (because of their permanency) are interest rates on long-term debt, and dividend rates on preferred stocks. Chief investment executive of one of our largest institutions thinks these rates may nudge upward a bit in the next three or four months — perhaps by one-eighth of 1 per cent per annum for high grade long-term corporate bonds.

In this case preferred stock dividends can be expected to increase proportionately. These views are echoed by an astute executive of an outstanding New York investment banking firm, a leader in underwriting utility securities. The up-shot seems to be that if you're thinking of selling first mortgage bonds (or other form of long-term debt), now would seem a good time, provided you can use the money within a few months. Otherwise it looks like a toss-up — for excess interest cost till you needed the money could make sale now a losing proposition. However, the differences don't appear enough either way to be exciting.

* * * *

EQUITY MONEY — AND THE STOCK MARKET. Stock market averages haven't moved sensationally — net — in 1955. Up to May 20, the New York Times combined stock averages had increased about 6 per cent over Dec. 31, 1954. From here on? Anybody's guess — as usual — but as this is being written it seems fairly safe to say that nothing drastic is likely soon, on the downside, with an even

safer prediction that the rate of continued upward trend in market levels isn't likely to duplicate the 45 degree angle of the last few months of 1954.

Now about raising common stock equity money. For corporations likely to need this kind of money within a year or so, perhaps the most expressive comment would be the colloquialism "What are you waiting for?" Except in special situations the best test of whether it's a good time for a company to sell common stock is the relation of earnings for the latest available 12 months to the current market price of its common stock.

If this ratio is favorable — and it should be now if your company's stock has done anything like as well as the averages — then this seems a good time to take advantage of the unusually satisfactory market conditions. The exception to this general recommendation is if there's something special on your horizon which indicates substantially higher earnings (or dividends) in the not distant future. In this case you should get a better price for the stock by waiting awhile.

* * * *

RAPID TAX DEPRECIATION — If your 1954 property additions were considerable, either in amount or proportion to total plant, and if you haven't already filed your 1954 tax return, then it's recommended you defer filing as long as possible, obtaining an extension of time for filing until Sept. 15. Most taxpayers are aware that failure to adopt rapid depreciation in their 1954 returns will forfeit permanently the benefits of such adoption as to additions made in that year. But our experience indicates that many taxpayers don't fully realize the value of the economic gains they can derive from the interest-free use of the deferred taxes over the period of deferral and, therefore, don't realize how much they're losing if they fail to act as to their 1954 additions.

This gain increases with longer life of property, making these benefits particularly high for utilities. This benefit could run as high as 20 per cent of the cost of the property additions, so for each $100,000 of 1954 additions you may be losing as much as $20,000 if you fail to adopt rapid tax depreciation for that year.

On the other hand, many taxpaying corporations are confronted with problems in adopting rapid depreciation — accounting treatment, for example. Utilities are faced with serious problems related to the effect of adoption on rates and rate-making. Your ultimate decision as to adoption, the scope thereof and the best method — based on the best advice available, including your tax consultants, of course — should be designed to attain the dual purpose of preserving the economic benefits of rapid depreciation as to your 1954 additions, while leaving the matter as flexible as possible to meet any future developments.

Mechanics of segregation and recording property subject to rapid depreciation, sometimes pose problems which affect the decision whether to adopt a rapid method. This phase of the subject will be discussed next month.

* * * *

"DAT OLE DEBBIL" — SECTION 462. Most every taxpayer probably has one or more items which qualify as estimated expenses properly deductible under Section 462 of the Internal Revenue Code of 1954. Equipment manufacturers, for example, have the item of guarantees. Companies in all industries may have the item of vacation pay, etc. In some cases the amounts may be so negligible as not to warrant operating under the section.

Retroactive repeal of this Section (and Section 452) by the House of Representatives threatens a most dangerous precedent for future tax legislation. As this is written the Senate Finance Committee is considering the matter. It is hoped the objectionable retroactive repeal can be eliminated by a compromise, perhaps limiting immediate loss to the treasury by a "spread-out" procedure.

For example, Tax Workshop School of New York (a graduate, professional school of taxation) has suggested spreading out 1954 deductions under Section 462 over five years — 1955-1959 — with gradually increasing deductions each year, starting with 10 per cent in 1955. This would limit the loss in revenue in 1955 to something like 50 million dollars, which is approximately equal to the original estimate of 47 million dollars of tax loss in 1955 made by the Senate Finance Committee in mid-1954.

Jess. J. Lappner, director of the tax school, points out that his plan would avoid increasing the 1955 federal budget deficit. However, chances of favorable action seem slim at this point. As in the case of rapid tax depreciation, it is recommended that 1954 tax returns be kept open as long as possible to obtain maximum advantage from future developments. Next month's column will contain a further report on this subject.

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THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

WE OFTEN WONDER why some of the Independent operating companies are reluctant to purchase adequate testing instruments. We have discussed this subject with some of the operating people who contend that testing instruments are too expensive and that they cannot afford such luxuries.

Actually it has often been proved that good testing instruments, if properly used, will prove a good investment for any company.

We are firm in the belief that the use of adequate testing instruments is rapidly becoming more important in the telephone industry. With the tremendous increase in telephone service throughout the country and the rapid expansion of customer-direct-distance-dialing, good transmission on all systems is most important.

The only method of assuring a proper grade of service is to make adequate tests of facilities at necessary intervals.

We recently examined a new transmission test set that appears ideal for making all necessary transmission tests in the voice frequency band. This set makes use of a transistor-oscillator as a source of audio frequency power.

The meter used is of the rectifier type and will measure levels within the range of +3 dbm to —15 dbm. Resistances as high as 40,000 ohms can be measured.

Blocking condensers are used in the oscillator and meter circuits so that transmission measurements can be made on common battery circuits.

The complete test set is housed in a box 8 inches x 6 inches x 3½ inches and weighs only four pounds.

This instrument is both convenient and practical and should prove a good investment for any operating company.

• • •

We are in receipt of a clipping from D. A. Boyer, commercial representative of the Kittanning (Pa.) Telephone Co. that explains how a horde of hungry squirrels has inflicted serious damage to the aerial cable of this company. Trouble has been caused in the Tidal, Widnoon, Redbank, and Rimerton exchanges, much to the dismay of General Manager K. Ben Schotte.

Aluminum sheeting is being placed around the poles in an effort to discourage the squirrels from climbing. Squirrels have always been a source of minor damage to aerial lead covered cable, but this case appears to be extra-severe. Many contend that the squirrels eat the lead to obtain urgently needed salt at certain times of the year. It is claimed that if a disc of rock salt is tacked to each pole where the squirrels run, they will eat the salt and go merrily on their way without attacking the cable.

If this plan will do the trick, salt will certainly prove cheaper than cable repairs.

• • •

The "Circle" magazine of the General Telephone Co. of California recently carried an interesting story in connection with the installation of an underground conduit system to serve the University of California campus at Goleta.

This campus includes a seashore plateau only 25 feet above sea level. Trenching operations for this project were started in the normal manner, with no indication that anything was unusual about the terrain. The next morning, however, the workmen found the trenches partially filled with water and the sides caved in. This indicated clearly that only small portions of the trench could be excavated each day, the conduit installed and backfilled immediately to avoid the cave-in problem. This work was being performed on the plateau, 25 feet above sea level, and it is still a mystery as to just where the water came from.

Conduits were finally installed to within 5 feet of the proposed manhole locations. Realizing that the manholes could not be constructed in the conventional manner, it was decided to attempt building them above ground and lowering them into place. Forms were constructed, concrete poured, and a 25-ton crane lowered the 11-ton manholes into freshly excavated pits, several times larger than actually required.

It is interesting to note that these manholes were spotted to within ½ inch of specified locations. Within a few hours after the manholes were in place, water filled in around them to a depth of 18 inches and workmen were forced to use rafts to place the bell conduit ends.

• • •

We have read numerous accounts of late about engineers from Bell Telephone Laboratories demonstrating "Little Audrey," the electronic robot that dials telephones.

This name is a contraction selected by the designers for the term "automatic digit recognizer." The device converts the spoken word into letters and digits to actuate dial switching equipment. Who knows but that someday this device may eliminate entirely the mechanical dialing of telephones?

Some few years ago, this writer witnessed a demonstration by two Swiss engineers of a telephone answering device. With this arrangement, you could call your own number at any time and by sounding a certain vowel code receive a playback of all messages recorded.

The Swiss engineers could make it work every time, but it just did not respond to our English vowels. Perhaps "Little Audrey" is somewhat similar, but with its relays adjusted to understand English.

• • •

We note that telephone companies in the Los Angeles, Cal., area are troubled with the lead-boring beetle, scientifically known as the *Scobicia De-*

clivis. Plant men call him the "short circuit bug" because his habit of gnawing holes in lead and plastic sheath often places trouble on several hundred telephones. So voracious is his appetite that he has been known to drill as many as 125 holes in a 100-foot span of cable.

This pest is most troublesome during the hot dry months of June, July and August in this locality. Spurred on no doubt by the summer heat, he attacks any lead alloy or cable sheath, tin, zinc, silverplate and quicksilver. The hole he drills is only 2½ millimeters in diameter, but this is large enough to permit the entrance of enough water to damage a large cable.

• • •

Recently we met a radio engineer on a still hunt for what he called straightened wire. We informed him that he must be mistaken as there was no such item on the market. It was then he proved that one is never too old to learn, for Copperweld Steel Co. delivered the goods.

This wire, No. 6 Copperweld, is run through a straightening machine so that it lies perfectly flat. It is then wound into large coils 6 to 8 feet in diameter for shipment. When it is uncoiled at the destination, it is practically flat. When placed under normal tension, it makes a beautiful job. This wire proves ideal in the construction of transmission lines for high frequency radio transmitting antennas when accurate spacing is most important.

• • •

The use of metal ladders in the utility field has in general been frowned upon in the past. They are generally considered an electrical hazard and dangerous as compared to the conventional wooden type. It is recognized, however, that metal has greater strength and often less weight than wood. Metal also lasts longer and does not develop hidden weaknesses with age. For this and other reasons, some companies have used metal ladders to a limited extent.

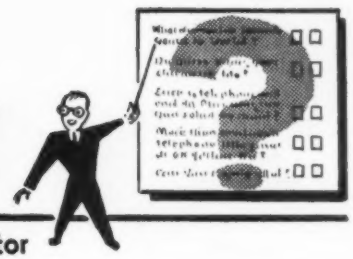
We should be pleased to hear from any of these users and to receive details of your experiences.

• • •

During 1954, the 3,000 vehicles of New Jersey Bell Telephone Co. rolled up more than 24 million miles, or the equivalent of 960 trips around the earth at the equator.

The cars of this fleet traveled an average of 97,000 miles between accidents, bettering last year's figures by 2,000 miles.

PLANT MAN'S QUIZ



by RAY BLAIN, Technical Editor

Q. Will a torch prove suitable for soldering a sleeve in splicing lead cable?

A. A torch of the proper type may be used to advantage for this purpose on aerial cable. It should never be employed in a manhole on underground cable because of the usual gas hazard attendant therein.

When used on aerial cable, care should be exercised to prevent heating the messenger strand since this might cause it to break. The lead sleeve should be placed and beaten in before the torch is applied. Such action will prevent the flame from coming in contact with the conductors or the muslin wrapping and causing damage. Stearine core solder should be used and the torch flame applied with a brushing motion.

Considerable practice may be necessary before the proper technique is developed.

• • •

Q. Will it be possible to make use of dry air to maintain pressure on an aerial cable?

A. Compressors equipped with automatic controls are now being installed in some exchanges for this purpose. However, the air must be dried chemically before it is forced into the cable sheath. The controls will then sound an alarm when the pressure is either too high or too low, or when the moisture content reaches a harmful value.

It must be remembered though that all leaks, even small ones in a lead cable, must be repaired before they are placed under pressure. Also, all terminals must be made air-tight. This is usually accomplished by installing a gas plug in the tail of each terminal. Equipment now available makes this a fairly easy and economical operation.

• • •

Q. What are the advantages, if any, in the use of aluminum conductors in exchange distribution cables? Is aluminum conductor cable still being manufactured?

A. We are informed that the Bell System started the development of the aluminum conductor for exchange cable in 1949. It has since been learned that aluminum will give conductivity equal to copper in one-half the weight. From a weight standpoint, and the greater cost of copper, there will be a considerable saving in the cost of the cable.

However, in order to obtain conductivity equal to copper, it is necessary to increase the cross-section of the aluminum wire about 50 per cent above that required for copper. This, in turn, will make necessary the use of a greater amount of insulating and sheath material which will reduce the cost advantage expected for the aluminum conductors.

The development of manufacturing methods and facilities for aluminum conductor cables has been carried to the point where the problems of manufacture are all reasonably well solved by the Bell System. The present supply of copper is adequate to meet the needs for communication cables.

Moreover, it is believed that a sufficient amount of aluminum conductor cables has been produced to implement a wide-scale study of its service performance. If this field test proves satisfactory, it is believed that aluminum conductor cable can be placed in production on short notice in the event our copper supply ever becomes drastically reduced.

• • •

Q. Will the use of cable terminals with paper-insulated conductors in the stubs prove suitable on plastic-insulated and jacketed cable?

A. We have been informed by one authority that when paper-insulated stubs are used, moisture migrates from the plastic cable into the paper-insulated stubs, causing failures. This authority states that lately sealed type terminals have been used which possess a plastic-insulated stub and that these have proved entirely satisfactory.

If the plastic cable is sealed at the splice where it connects to the cable stub, we are at a loss to understand why moisture affects the paper insulation. However, cable terminals with plastic stubs are now available on the market and may be used, as required. Perhaps it is a good practice to use, if possible, all plastic insulation on a system where plastic cable is installed.

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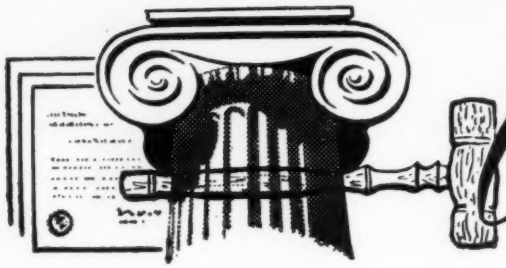


Courts and Commissions

Montana Court Confirms Stand On Attorney General's Powers

Montana's supreme court rejected a petition on May 11 for rehearings of cases in which it had ruled that the state attorney general has the power to challenge the validity of public utility rate increases granted by the Montana Public Service Commission (TELEPHONY, Jan. 1, p. 36).

The attorney general had challenged the validity of higher telephone and natural gas rates granted Mountain States Telephone & Telegraph Co. and Montana Power Co. in 1953.

Effect of the high state court's opinions and denial of the rehearing petition was to return the cases to the Lewis and Clark County District Court for trials on their merit.

In originally initiating the action against the companies, State Attorney General Arnold H. Olsen contended the rate increases deprive Montanans of $2,688,300 annually.

District Judge W. W. Lessley had ruled that attorney Olsen was not a proper person to bring such an action. He held that the attorney general lacked the right to make an appeal because he did not show himself to be a party in interest.

The state supreme court, however, reversed the lower court judgment in the telephone case, with this comment:

"The action taken by the attorney general questioning the reasonableness and lawfulness of the rates is a proceeding affecting public interests and properly maintainable by him."

The high court's opinion in the gas case pointed out that what was said in the telephone case had "equal applications here."

Mass. Company, an REA Borrower, Gains Partial Rate Relief

Acting under authority of the Massachusetts Department of Public Utilities, the Granby Telephone & Telegraph Co. increased its rates for magneto service, effective May 1, it was announced by Alston D. Mugnier, president of the company.

The Granby company, which serves approximately 550 subscribers, is an REA borrower.

For the last two years, operating losses have been approximately $4,000 in 1953 and $3,000 in 1954.

The company plans conversion to automatic operation within one year.

It was reported that the increase in revenues due to the rate change will be $1,200—not enough to bring the company out of the red.

The approved magneto rate raises are as follows: Multi-party and four-party residence, from $2.50 to $2.75; two-party residence from $3.00 to $3.25; one-party residence, from $3.25 to $3.75.

Multi-party business rates will go from $4.00 to $4.75; while the four-party business will go from $4.25 to $5.00; two-party business from $5.00 to $5.50; and one-party business from $5.50 to $7.50.

Missouri Commission Grants Rate Increase to Independent

The Seneca Telephone Co. has been granted a rate increase by the Missouri Public Service Commission. The old and new schedules are:

One-party business, increased from $5.00 to $6.00; two-party business, $4.50 to $5.00; one-party residence from $3.50 to $4.00; two-party residence, $3.00 to $3.25; four-party residence, $2.50 to $2.75; rural multi-party business, $3.00 to $4.00, and multi-party residence from $2.25 to $2.75.

New Jersey Governor Appoints E. J. Hart to Commission

Former Rep. Edward J. Hart of Jersey City has been appointed by Governor Meyner to succeed John E. Boswell on the New Jersey Public Utilities Commission.

Mr. Boswell's term expires on June 15. He has served two terms of six years each on the commission and was president for seven years.

Illinois Commission Grants Rate Increase to Independent

The Illinois Commerce Commission authorized the Crescent Telephone Co. to advance rates at its Erie and Hillsdale exchanges, effective Apr. 1. The old and new rates follow:

	Old	*New*
One-party business	$3.25	$3.50
Two-party business	3.00	3.25
Rural multi-party business	2.75	3.00
One-party residence	3.00	3.25
Two-party residence	2.25	2.50
Four-party residence	2.00	2.25
Rural multi-party residence	2.25	2.50

Rates Up for Wisconsin Co. First Time in 35 Years

The first rate increase in 35 years was effected on May 1 by the Oneida (Wis.) Telephone Co., William Morgan, company president announced.

Elimination of toll charges on calls to De Pere and Green Bay (exchanges of the Bell System's Wisconsin Telephone Co.)—and substitution of extended area service — was expected actually to save money for 90 per cent of the subscribers, Mr. Morgan estimated.

For the past 35 years, rates for all classes of service have been $2.00. Under the new schedule, the following rates will apply:

One-party business	$10.90
One-party residence	5.40
Rural business	5.50
Rural residence	3.80

Requests Authority to Buy Pennsylvania Independent

The Pennsylvania Utility Commission was to have held a hearing on May 25 on a proposal by the United Co. of Pennsylvania, Harrisburg, to purchase the Southern Telephone Co. of Pennsylvania, Greencastle.

Headed by A. G. Crunkleton of Greencastle, the Southern company's approximately 255 subscribers had been switched by the United company at Chambersburg.

Indiana Commission Authorizes Rate Raise for Co-Op

Rockfield Cooperative Telephone Co., has been authorized by the Indiana Public Service Commission to increase its rates, effective May 1.

The company, which lost $1,257.92,

was given permission to increase rates sufficiently to boost net operating income to $524.65 a year.

Kansas Commission Hears Cases On Rates, Ownership, Operation

On Apr. 25, the Kansas Corporation Commission heard the application of Herald Osburn, doing business as the Bentley Telephone Exchange, to raise rates for service.

The commission heard three other applications concerning the Gorham Telephone Co.'s plan to take over service at Victoria and in a small strip in Ellis County west of Paradise.

The German American Telephone Co., Victoria, asked permission to cease operating its Victoria exchange.

United Telephone Co. of Kansas, Inc., asked to drop a small part of its territory near Paradise.

South Carolina Independent Requests New Rate Schedule

The South Carolina Public Service Commission was to have held a hearing on May 17 on a petition by Chesnee Telephone Co. for authority to increase its rates and charges for telephone service.

Rates proposed by the company follow: Business, one-party, $7.50; two-party, $6.00; five-party, $5.25, rural, $5.50.

Residence, one-party, $4.75; two-party, $3.75; five-party, $3.50; rural, $4.00.

California Considers Bill on Emergency Party Line Use

On May 11, Assemblyman John J. McFall introduced a bill into the California legislature making it a misdemeanor to give up a party line when wanted by someone else for an emergency call.

It would apply in the case of calls to a police or fire department or for medical aid or ambulance service.

N. Y. Commission Authorizes Four Companies to Raise Rates

On May 20 the New York Public Service Commission authorized the following rate increases:

The Cato & Meridian Telephone Co., to raise rates by an estimated $14,300, effective June 1. The company provides automatic service to about 2,000 telephone stations through central offices at Cato, Hannibal and Fair Haven in Cayuga County; also serves about one-half of the territory of the former Patrons Telephone Co. through a magneto switchboard in Lysander, for which no rate changes were proposed. In seeking its increase, the company reported plant investment had increased from $230,000 in 1951, to $485,000 in 1954 as the result of conversion to automatic, and that additional revenues were needed to enable it to render continued adequate service.

The Deposit Telephone Co. will increase rates by $42,300, effective June 1. Its Deposit exchange was converted to automatic operation on May 15.

In filing its new tariffs, the company reported its plant investment had increased from $514,000 in 1953 to about $800,000, as the result of conversion of its entire system to dial service, and that additional revenues were needed if it were to continue to render adequate service. It also reported increased operating costs due to raises granted employes, and higher costs of materials and supplies.

Under its new tariff, rates will be as follows: Residence, one-party, $4.50; four-party, $3.25; ten-party rural, $3.50. Business, one-party, $7.50; two-party, $6.25; four-party and ten-party rural, $5.50.

The Johnsonville Telephone Co. will increase its rural residence rate from $2.50 to $3.00, effective June 1.

The company reported an operating loss of $1,853 during 1954, largely due to increased maintenance costs. It estimates that the new rates will produce about $843 additional revenue to partially offset its operating loss.

The commission also accepted a tariff amendment filed by Stockton Telephone Co. to increase residence and business rates, effective June 1. It estimates the new rates will produce about $2,700 additional revenue.

In seeking the higher rates, the company reported its plant investment has almost doubled since 1953 as the result of cable installations and other rehabilitation moves undertaken in the past year preparatory to an eventual conversion to automatic operation, and said additional revenues were needed to enable it to continue adequate service.

Seeks N. Y. Stock Issue OK

The New York Public Service Commission on May 26 was to have heard the petition of the Ontario Telephone Co., Inc., for authority to issue common and preferred stock.

Illinois Commission Hears Case

The Illinois Commerce Commission on May 26 heard the application of the Okaw Commercial Telephone Co., Okawville, to increase rates.

IN THE NATION'S CAPITAL

Continued from page 22

dollars. These figures include hydro projects, appurtenant facilities, and transmission lines. Lesser utility systems (heating, water, and communications) are broken down as follows: Defense, $1,616,000,000; AEC, 216 million dollars; housing, 99 million dollars; others, 187 million dollars. Electrical distribution credited to Defense, Interior, and AEC refers to systems which are owned by the federal government, but which distribute electricity purchased from other sources.

Hoover Group Hits Government in Business

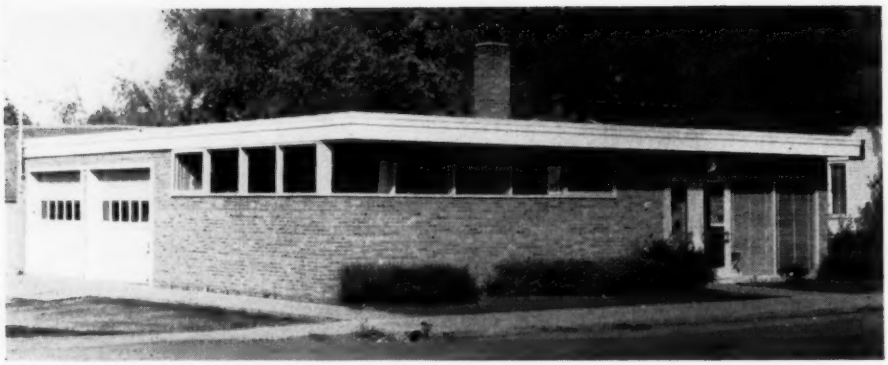
Another Hoover Commission report was released last week. It recommends getting the government out of business in other fields. This is the report on federal business activities which compete with tax-paying enterprises generally. Activities of the Defense Department, the TVA (mostly in fertilizer operations), and the Post Office Department were sharply criticized by the Hoover group. Some dissents (chiefly as to TVA) were noted.

The commission recommended that TVA discontinue chemical research and that fertilizer research facilities be turned over to the Agriculture Department. It also recommended that Congress "instruct the comptroller general to determine what the real costs of TVA fertilizer are; and that thereafter the price of such fertilizer include all costs, direct and indirect, including the loss of taxes which could be obtained from private industry." TVA's sales of phosphate and nitrate fertilizers in 1954 totaled 19.8 million dollars. Sales were made in 35 states and the commission observed: "This is no longer a regional enterprise, as originally contemplated."

The Hoover Commission's report was critical of Interior's research in producing petroleum from oil shales. Approximately 90 per cent of the most prolific oil shale beds belong to the government. The report noted that Congress has poured considerable funds into research facilities of the Bureau of Mines at Rifle, Colo., but that several oil companies had developed methods for refining the crude oil from the shale. The report recommends that the research proceed only until cost data are fully available. There is another Hoover Commission report on TVA and other federal power agencies to be released in June. The public power bloc in Congress are shooting at it already.

>> Three out of four traffic accidents involve passenger cars.

XUM



Two typical central office buildings erected by Pioneer Telephone in its conversion program. LEFT: Cokato, Minn. ABOVE: Howard Lake, Minn.

Pioneer System Speeds Conversion Program

During the past six years the Pioneer Telephone System with headquarters at Waconia, Minn., has made a substantial contribution to the program of modernizing and expanding telephone service in Minnesota and North Dakota.

Fourteen operating companies are included in the system, all of them located in Minnesota and eastern North Dakota. The system serves approximately 25,000 telephones from 41 exchanges.

A program of conversion to dial service was started in 1949 and during the six-year period since that time the Pioneer companies have converted 19 exchanges to dial service.

Buildings are of brick and tile construction. Rural lines have been reduced to 10 subscribers or less per line and selective decimonic ringing is standard.

The Pioneer system completed the installation of two automatic exchanges during April and May. Aneta, N. D., serving 200 town and rural customers was converted from magneto to dial service on Apr. 12. Six of the company's ten exchanges in North Dakota are now automatic-operated and three additional exchanges are scheduled for conversion during the next 12 months.

On May 9, a new exchange was installed at Victoria, Minn. The community was formerly served by multiparty lines from three neighboring exchanges. This exchange serves 130 subscribers and extended area service is also furnished to Waconia and Chaska, Minn., adding about 1,800 telephones to the exchange calling area. Both Chaska and Waconia are located approximately 6 miles from Victoria.

Three of the associated companies are located adjacent to the Minneapolis-Saint Paul metropolitan area and are substantially affected by the industrial and residential expansion of this section.

The largest oil refinery in the upper midwest is located in the Pioneer System's area and another important customer will be a 15-million-dollar ammonia plant to be constructed during 1955. Other associated companies are located in rich agricultural and rapidly expanding resort areas.

An important part of the funds for capital expansion have been raised through the sale of preferred stock to investors in Minnesota and North Dakota. The annual budgets covering expenditures for gross property additions during the past four years have averaged approximately $800,000 annually, and during 1955 the system plans expenditures of $1,016,000.

Automatic conversions are scheduled for Chaska, Granite Falls, Plainview and Dassel, Minn., and Portland, and Buxton, N. D.

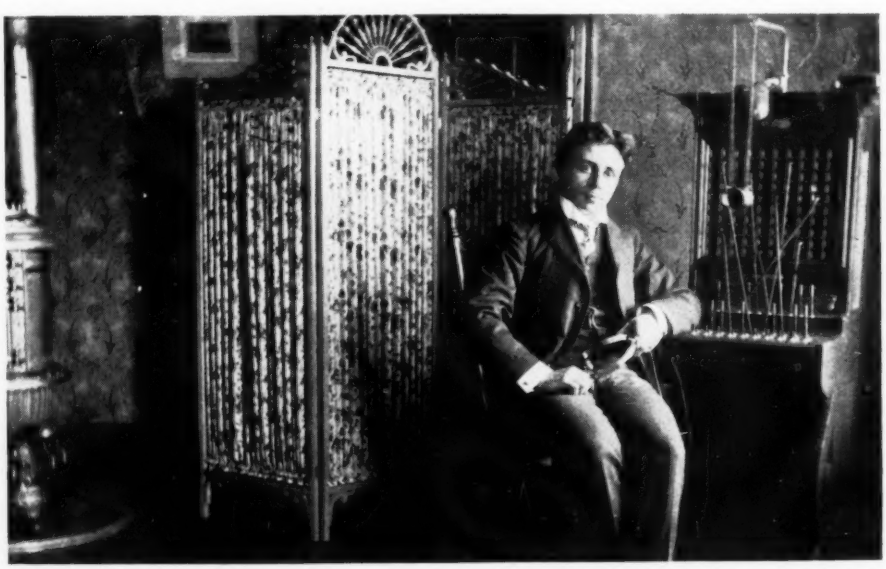
After completion of the other conversions, 60 per cent of the system's telephones will be operated on a dial basis and 29 of the 41 exchanges will be automatic-operated.

The balance of the telephones are scheduled to be converted to dial service by the end of 1959.

The system is well along with a program of rebuilding and expanding rural plant, and by the end of 1955, 90 per cent of the 8,043 company-owned rural telephones will be served on 10-party lines.

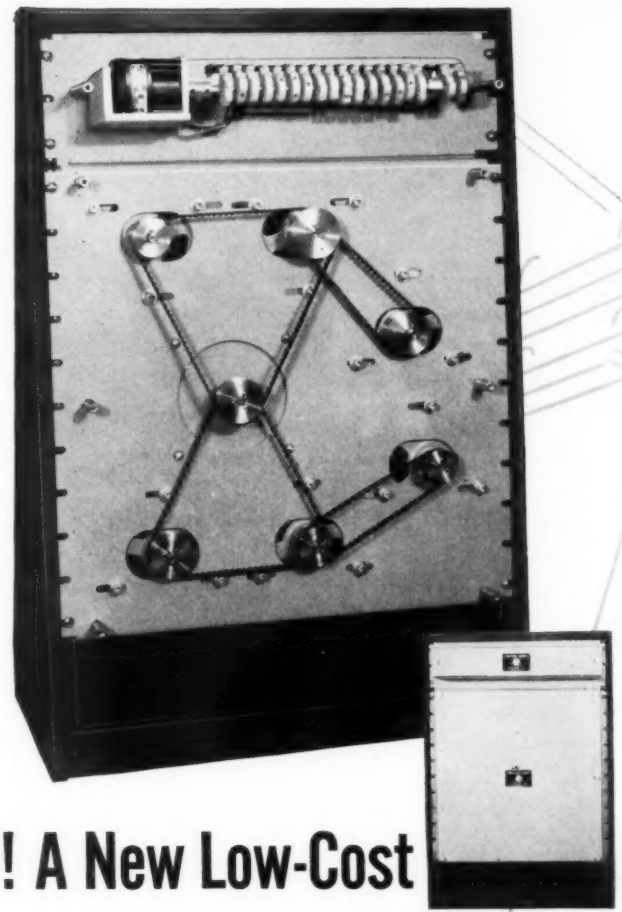
The Pioneer System has been operated under the present management since 1945 and during that period has grown from 10,000 telephones to the present total of 25,000. A portion of this increase has been normal year-to-year growth and expansion and a portion is due to other telephone companies being merged with the Pioneer system.

"Society exists for the benefit of its members; not the members for the benefit of society."—HERBERT SPENCER, Principles of Ethics, 1879.



Seated at the first switchboard installed in Pella, Iowa, is WALTER FOWLER who established the Fowler Telephone Co. at Pella in 1900. Still the owner and president of the Fowler company, he got his start in a remarkable way. The story is that he experimented with wire communication at his home while he was a student in Central College, Pella. His first experiment was to string a private wire between his home and the home of his college girl friend about two blocks away. This achievement gained a good deal of fame locally for the young student. Some of the more envious boys on the campus planned to disturb the conversations of the two lovers by cutting the wire. Mr. Fowler was tipped off by one of the students and planned to watch the following night and protect his wire from damage. As he sat watching in the moonlight he fell asleep. Awakening, he found the damage had been done—the line was dead.

Holtzer-Cabot Presents another "first"



NOW! A New Low-Cost 25-Watt Multi-Frequency Ringing Panel

Again, Holtzer-Cabot engineers have developed a great new product for the telephone industry — *a ringing machine that is standard, complete, and capable of generating harmonic, synchromonic or decimonic series of ringing frequencies all at the same low cost.* The rated output is 25 watts for each of the five basic frequencies. Voltage selection is regulated at the output terminal strips. No insulating transformers are required.

Low Operating Costs!

The low AC power consumption of the primary unit assures continuously low operating costs. The stand-by unit uses a minimum of DC power, thereby extending the battery's life during power failure.

Minimum Maintenance!

All generators are the permanent magnet type, and cannot be demagnetized by short circuits or disassembly. The sealed ball bearings and long-life cog belts virtually eliminate maintenance.

Precise Frequency Regulation!

The generators are cog-belt driven from either a synchronous AC motor or a governor-controlled DC motor to ensure exceptionally accurate frequency regulation.

The panel is furnished completely wired and assembled, ready for mounting in standard relay racks. The tone generator and the motor-driven interrupter (shown in illustration) are available as optional equipment.

Send for data sheets today!

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construction and maintenance DIGEST

- Die-hard battery
- Eying the weather
- No slivers here
- Guard 10 lines

Published every week to help you get the most out of your materials and supplies dollar

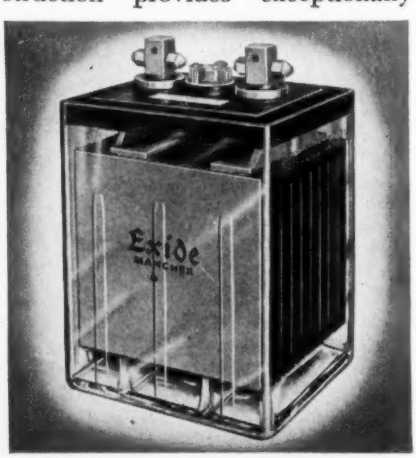
by C. J. Reynolds, Stromberg-Carlson

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

Protect yourself from battery failures

You can use Exide Manchex Batteries for central office and private branch exchange equipment, and be sure you'll get a supply of power when you need it. These batteries have been proven daily in exchanges of every size, and for 67 years Exide Batteries have been serving the telephone industry.

The manchester positive plate with its exclusive button-type construction provides exceptionally long life. Latest developments on molded glass jars permit compact space-saving installation.



Old age, even high discharge rates, have little effect on this battery.

Heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates. Microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions. Plastic spacers assure plate alignment.

Fast delivery available from your Stromberg-Carlson supply representative.

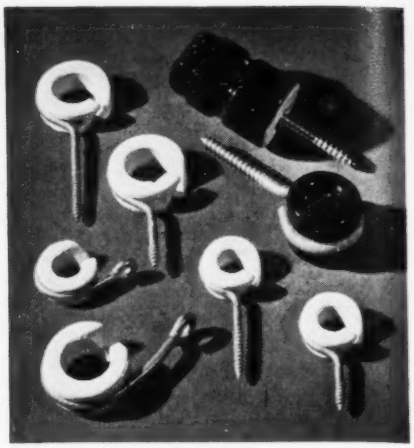
Here are screw eyes that wink at the weather

These insulated screw eyes are made to give you fast installation and withstand the ravages of the weather.

Thus you assure yourself of low-cost line work, and reduce the nuisance of having to replace weathered or broken screw eyes.

As you see in the picture, these screw eyes are offered in both the split ring and solid ring styles. They are made to exacting specifications by Porcelain Products, Inc., who have specialized in serving the telephone industry for many decades.

Hooks and screws are hot-dipped galvanized. Porcelain parts are high grade, glazed dry-process electrical porcelain.



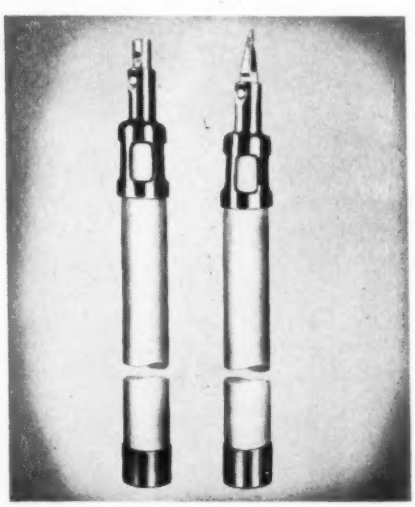
These insulated screw eyes are built to stand up in all kinds of weather.

Available in a variety of sizes and styles. Your Stromberg-Carlson representative is prepared to give you prompt delivery on your order. Call him today.

Splinterproof pike poles last longer

Maplac*, the transparent plastic finish used on Chance Hot Line Tools, has been indorsed with popular acclaim by linemen and management alike.

And now—this tough, moisture-resistant plastic protection is being applied to Chance Pike Poles, greatly increasing their service life and adding to their safety.



SAFETY PIKE
At left, point is reversed for safety in transporting. *At right,* pike pole is ready for business.

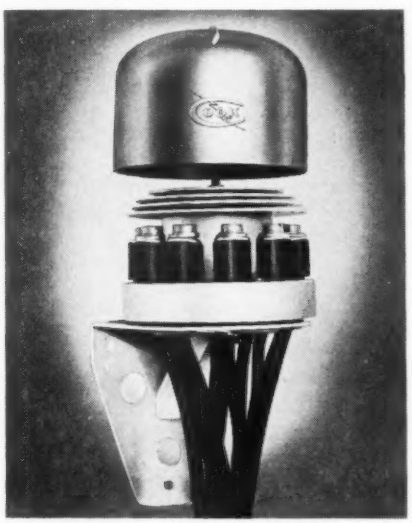
Splintering of the wood poles is eliminated, preventing lost time hand injuries. The durable plastic coating is available on both the

reversible safety point and standard models.

Your Stromberg-Carlson representative can offer prompt delivery on your order. *Trade Name

The new 5 circuit
Hy-Cap Power Cross Protector

Whenever telephones are in joint occupancy with power lines, a heavy-duty protector should protect the telephone lines against destructive power cross.



Now—Protect 5 circuits against power crosses with one protector.

Such protection can now be had when the Cook Electric Company's Hy-Cap 5 Pair Power Cross Protector is installed. This unit mounts on a type 10B cross-arm and will protect 10 lines. Connections are made with pre-cut No. 10 plastic insulated copper wires which terminate on rugged discharge carbons. There is just one ground wire for easier installation. The protector will break down at 3000 volts and will continue to ground the fault current as long as it exists.

A single pair Hy-Cap Power Cross Protector is also available.

See your Stromberg-Carlson representative for further information.

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North Dakota Association Elects Officers, Directors

John L. Nilsen of Nome was re-elected president of the North Dakota Telephone Association at the group's annual convention which ended in Fargo on Apr. 26.

Also re-elected were G. B. Brown of Enderlin, vice president, and W. G. Matson of Stanley, secretary-treasurer.

F. W. Ahlgren of Parshall was elected a director and R. R. Borman of Fargo, and Tilman Overmoe of Hillsboro, were re-elected to the board.

Four Connecticut Men Cited for Aid to Electrocution Victim

Four New Milford, Conn., telephone men whose quick action saved a co-worker from electrocution will be honored with a citation and a bronze metal plaque from the Theodore N. Vail Memorial Fund.

Ellis C. Maxcy, personnel vice president of The Southern New England Telephone Co. in New Haven, announced the award would be presented to Kenneth M. Law, foreman, and three other members of his telephone construction gang: John K. Stone, William T. O'Donnell and Edward L. Gale.

The men are being honored for their prompt action when an associate, James R. MacBride, was knocked out by 4,600 volts of electricity while working in Woodville last Dec. 29.

Another award, the "President's Medal" of the National Safety Council, will be presented to Mr. Law, who restored MacBride to consciousness by artificial respiration.

The accident occurred while the five men were removing copper wire from a pole line being shifted. MacBride was holding the lowered wires when an insulator pin supporting overhead power lines snapped off, allowing the 4,600-volt power lines to sag into contact with the telephone wires. Unable to let go the charged wires, he was knocked to the ground, unconscious.

Stone, avoiding contact with the truck, which was also energized by the contact, grabbed rubber gloves from the vehicle and tossed them to O'Donnell, who was hurrying toward MacBride. O'Donnel then cut the charged wires with pliers, and Law and Gale rolled the unconscious victim from the ditch where he had fallen.

Law then began artificial respiration, using the "back press arm lift" method in which telephone men have been trained for the past two years. Although breathing had stopped and the victim was ashen gray, he began to show signs of life within two or three minutes, and had regained consciousness and natural breathing within five minutes.

Meanwhile Stone had used his telephone testset to call an ambulance from a neighboring town. The ambulance arrived in 15 minutes, followed by a doctor. MacBride was transported to the New Milford Hosipital and treated there for severe burns of both hands, face, neck and right foot. Hospitalized for several weeks, he is now recovering use of his hands and is expected to return to work later this year.

Paralyzed in Both Legs He Carries on as Operator

A four-column, illustrated story in the Gainesville, Ga., *Daily Times*, recently began:

"Not even the World Almanac lists the number of male switchboard operators in the United States, but Helen (an exchange of Standard Telephone Co., Cornelia, Ga.,) subscribers have long been convinced that their man—Floyd Caudell—is one in a million.

"And just so he would get the general idea of the esteem and good wishes of his townsfolk during a recent serious operation and long convalescence, the people to whom he's the voice with the helping hand, gave him a helping hand in the form of a generous purse of cash."

From 1938 until 1943, Mr. Caudell worked as a lineman for the REA. In January 1943, he was hospitalized for 14 weeks as a result of an accident occurring while on the job, and he was left totally paralyzed in both legs.

The writer in the Gainseville paper continued:

"When the Standard Telephone Co. of Cornelia pioneered telephones in Helen, Ga., Mr. and Mrs. Milton Stewart, owners, placed the switchboard in the house rented by Mr. Caudell so that he could man the board in his first full-time employment since his crippling accident.

"He rang the first telephone on the Helen switchboard on Dec. 1, 1951.

"Since that day, the number of patrons he says Number Please to, has grown from 17 to nearly 100."

Two Independents Consolidate

Stockholders of the Farmers Telephone Co. and the Essex Mutual Telephone Co. have approved a merger, the Des Moines (Ia.) *Tribune* reported on May 15.

Kentucky Purchase Reported

It was reported recently that the Southern Continental Telephone Co., Cookeville, Tenn., sold its Russell Springs, Ky., properties to the Russell Home Telephone Co. (TELEPHONY, Oct. 30, 1954, p. 45).

XUM

The OPERATOR'S CORNER

by MAYME WORKMAN, Traffic Editor

THE MARCH, 1955, issue of the "Mouthpiece," General Telephone Co. of Pennsylvania's magazine, published an interesting account of the inception and inauguration of "The Morris Felton LaCroix Award of the General Telephone System." According to the article, the General Telephone Co. of Pennsylvania has the distinction of having one of its employes, Miss Helen L. Weaver, plant clerk at Oil City, Pa., receive the first LaCroix Award in the General Telephone System, consisting of the LaCroix bronze medal, merit certificate and a check for $100. The award was made in recognition of the courage and fortitude displayed by Miss Weaver in saving a small boy from drowning.

The incident occurred about 5:30 p.m. on Jan. 21, 1954, when three youngsters, Robert Hadley, John Barnes, and Michael McCarthy, were playing on the ice of the Allegheny River at the foot of Innes Street in Oil City.

As the boys romped on the treacherous ice, Robert Hadley suddenly plunged into the river and while he kept himself afloat among the large pieces of ice in the river, his pals shouted for help. Helen, who lived nearby, and a neighbor, Mrs. Culver, heard the calls for help and ran to the river to Robert's rescue.

While Mrs. Culver held her ankles, Helen crawled carefully toward Robert as he struggled to avoid being crushed by the blocks of ice.

Without warning the ice broke underneath the two women and they found themselves in the ice cold water. Miss Weaver's father arrived at the scene and succeeded in pulling Mrs. Culver out of the river, then the two of them teamed up to bring Helen to shore with Robert firmly in her grasp.

Mr. L. F. Shepherd, president of the General Telephone Co. of Pennsylvania, in making the award presentation, stated:

"This is an important occasion. I am happy to see an idea become a reality. I am delighted and proud to be the first person to have the privilege of presenting a LaCroix award. I am thrilled that the first LaCroix award to be presented to any person anywhere goes to such a fine young lady in our organization. Miss Weaver, the LaCroix bronze medal, merit certificate, and a check for $100 is awarded to you in recognition of your act of unusual merit and bravery which displayed great initiative and personal courage in the rescue of Robert Hadley.

"I am quite sure your fellow employes here tonight and all employes throughout the entire General Telephone System are proud of you. It is a pleasure and an honor to make the presentation of this award which you so richly deserve."

According to the article appearing in the "Mouthpiece":

"Since the beginning of time, history has recorded the deeds of brave men who have distinguished themselves on the fields of battle. It is traditional for people to give special recognition to the accomplishments of those who display the initiative, courage and personal sacrifice to undertake to perform a service to mankind which is above and beyond the call of duty.

"It is the custom that those so honored do not solicit such recognition, but rather that the incident is judged by others to merit special consideration, and the individual who performed the service is awarded the distinction of having earned special recognition."

In August, 1953, at a meeting of the presidents of the operating companies of the General Telephone System, the suggestion was made that some formal recognition be awarded to employes of the system, who, through personal sacrifice, quick thinking, or prompt action, distinguished themselves and thereby play an important role in saving a life or preventing great property damage.

Such a plan has now been developed. To recognize and honor meritorious acts, General Telephone System has established the LaCroix awards, effective Jan. 1, 1954, for all General Telephone employes.

It must be most gratifying to President L. F. Shepherd, the General Telephone Co. of Pennsylvania and its employes, and to the General Telephone System as a whole, that the first LaCroix bronze medal, certificate, and cash award has been merited and presented to Miss Helen Weaver.

The LaCroix awards, named in honor of the man who is mainly responsible for having organized the General Telephone System, Morris Felton LaCroix, chairman of the board of General Telephone Corp., provides for a LaCroix certificate together with $25 that is awarded for incidents of meritorious service where the personal safety of the employe performing the service is not in jeopardy. A LaCroix bronze medal certificate and $100 is awarded for the incident where the personal safety of the employe is in jeopardy. These two classes of awards are judged and presented by the operating companies of the General Telephone System.

Any employe receiving a bronze medal automatically becomes eligible for consideration to receive a LaCroix silver medal with $500 or the LaCroix gold medal with $1,000. These latter two awards are judged and awarded by the New York office of General Telephone System, and all employes of the system who have received the LaCroix bronze medal will be considered for the silver or gold awards.

Awards will be given annually. Every effort will be made to build a tradition for these awards which, through the years, will enhance their significance, both to telephone people and the general public.

The General Telephone System and those who were responsible for inaugurating the establishment of the LaCroix awards are to be congratulated.

The first sentence intelligibly transmitted by the telephone was a call for

(Please turn to page 44)

TOP PHOTO...shows new PENGO duct rodding machine in use by a major public utility in San Francisco Bay Area.

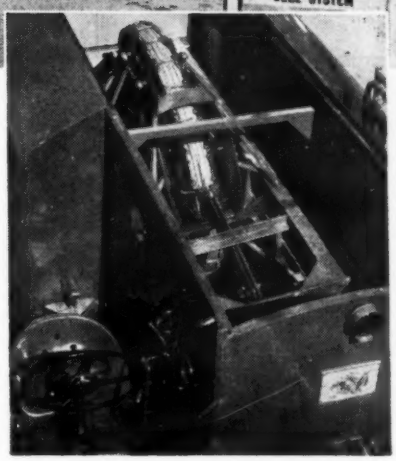


PHOTO AT RIGHT...shows inside mechanism. The large reel revolves clockwise as it pays out or pulls in the steel rod.

Patented

New Duct Rodding Machine

The New Pengo Duct Rodding Machine is capable of rodding ducts to a distance of more than 1000 feet.

An exclusive feature of this ingenious equipment is that it will pay out, hold steady or withdraw the rod without shifting or stopping. It is controlled by the "steering wheel" shown at rear of unit.

Proved in a test operation by a leading utility firm, one machine is claimed to have saved $30,000 over previous methods in one year. In actual use, it successfully rodded over 13,000 feet of ducts in one day.

The reel is designed to hold 1400 feet of #0 oil tempered spring steel wire rod.

The throttle, transmission lever, carriage brake, rod control, footage counter and tachometer are located convenient to the operator.

The body has two tool boxes at running board height and two small tool boxes in the front corners of the body. Top of the mounted unit has two sliding doors that fully expose the mechanism. A window at the operator's left permits him to observe the working mechanism.

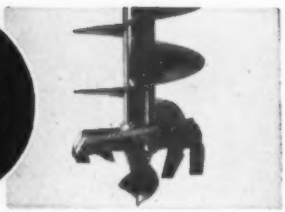
A 20 ft. length of spring steel lined wire guide hose together with a support stand is supplied with each unit. Red blinking warning lights are also standard equipment.

The unit can be adapted to fit on most standard 1½ and 2 ton truck chassis. Outside of the unit can be painted any color. Inside moving parts are painted red. Inside of body is painted aluminum for ease in distinguishing moving parts.

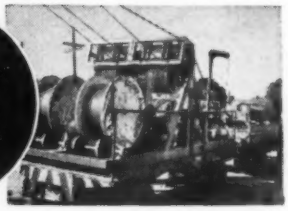
Other PENGO products include:

Heavy Duty Flight Auger

Cutting Head



Tension Wire Stringer

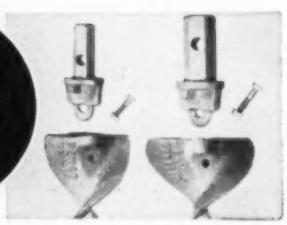


Pulling Eye

Pole and Transformer Chariot

Bucket Auger

Screw Bit for Small Diameter Holes



MAIL THIS COUPON!

PETERSEN ENGINEERING CO.
Santa Clara, California **Dept. 11**

Please send me more information on your new Pengo Duct Rodding Machine.

Name_____
Firm_____
Address_____
City_____ State_____

Made by the makers of the World-Famous
PENGO EARTH AUGERS

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ENGINEERING COMPANY
Santa Clara, Calif.

GENERAL
MACHINE PRODUCTS
COMPANY, INC.
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Aerial Tents
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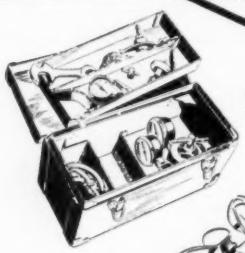
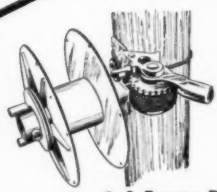
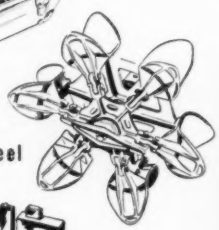
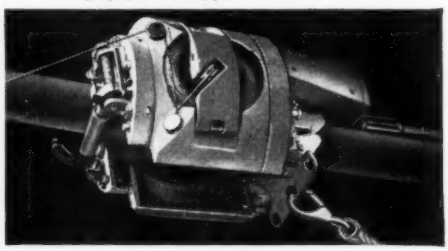
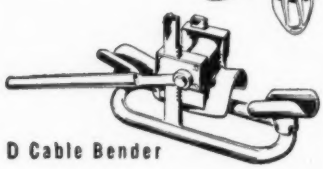
Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps and Grips
Portable & Power Reels


Pressure Testing Kit


R S Power Reel


C R Power Reel

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are permanently sealed out of every connection that is protected by this easy-to-use, hand-moulded compound. Even on underground applications, the high dielectric strength and chemical stability of KEARNEY AIRSEAL give ageless, tight-sealing protection and insulation.

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JAMES R. KEARNEY CORPORATION ST. LOUIS, MO. GUELPH, ONT.

216

For Better Construction SAFER Maintenance

THE RESPONSIBILITIES OF MANAGEMENT

Continued from page 20

action without proper counsel or consideration, and ill-founded but immovably fixed opinions. Maturity usually clings to a middle ground, realizing from experience that extremes are inevitably wrong.

Persons are not born with good judgment—it is an acquired trait, the result of proper interpretation of experience.

FIFTH—*An Inquiring Mind.* Executive work consists of analyzing business and personal problems and making necessary decisions. This is largely a mental job. A great deal of attention is usually paid to the work an executive does which shows in action but not so much notice is given the working time spent in reviewing or receiving information, in examining reports, having interviews, and giving attention to the advice and recommendations of others in and out of business.

The competent man is never satisfied. He is seeking the right perspective, the best answer and the best method. He is always looking for improvement and trying to find out how much better each job, or the whole job, can be done. There are business problems to be determined, analyzed, and defined; answers to fit the circumstances that must be prepared; tasks to be delegated; people studied so they can be assigned tasks within their capacity; ways and means found for getting things done; and, most important of all, the necessity for results from a complicated economic and personal mechanism.

Every part of management work requires continuous investigation and analysis. The manager must find out the difference between what circumstances and people seem to be and what they really are; he must arrive at the best apparent conclusion, and determine that the things that are planned and put into operation are proven right in the doing.

SIXTH—*An Understanding of Business Procedures, Purposes and Relationships.* This involves a comprehension of what these things mean rather than merely what they are. It is a step beyond both experience and knowledge and is acquired by thinking about what is being done by the individuals, and the business as a whole. All internal and external relationships and all activities involved in attaining a definite objective must be considered and understood as part of the one process.

SEVENTH — *Thinking Objectively.* When a house is built plans are pre-

pared and specifications for materials are written. There is a deliberate intention to put down in definite form what is needed to complete a certain kind of a house. That is an objective process—everything done is related in the mind to a specific object outside of the mind itself.

In business, the manager must apply the same practice to the business itself and the individuals in it. The thing to be done is visualized in all its details. Mental mechanical drawings are made—mental pictures of what is intended to be done and how it will be accomplished. Everything is related to the final purpose and is assigned a true value in that relationship. This is usually accomplished with little difficulty where materials and tools and mechanical equipment are concerned and not so easily with persons. Yet individuals must also be measured and valued according to the necessity of both the circumstance and the business. They must fit the objective as well as the materials.

EIGHTH—*Thinking Grounded in General Principles and Fundamental Laws.* The greatest advantage anyone can take for himself is the knowledge and use of principles. Born out of the sweat and labor and experience of other men they have been proven again and again. To know them and to use them is just a short-cut to experience. What unnumbered men have learned as a result of struggles with their own mistakes can serve anyone today and tomorrow.

Most people tend to complicate the things they do instead of simplifying them. Their mental processes are clogged or distorted by consideration of everything but the "central fact." To locate this requires stopping and looking for it. One good fundamental guide is to find a complete and clear answer. Once discovered all other details fall into proper place and value.

"Simple thinking" is one of the most useful tools of management. It arises from the use of principles that have been organized and formulated from experience, and which have worked constructively and stood the test.

The first thing to do is to develop useful principles from observation and study of daily experience. The next best thing is to use the ready-made experience of men who had bigger and better opportunities to draw from.

From either source, principles of any kind are as useful in the handling of small responsibilities as they are in the handling of large responsibilities. What is more important, their use is the best training and demonstration of a ca-

the CHANCE "Blackfoot"

holds more— goes down faster

CAN BE INSTALLED BY MACHINE TO CUT LINE CONSTRUCTION COSTS...

KING SIZE THIMBLEYE

The extra large eye of the Chance Blackfoot accommodates a turning bar big enough to make hand installation easy, and fits all hole boring machine adapters.

PITCH CONTROLLED

This accurately pitched, fast cutting blade really goes down fast. Every size anchor is individually "pitch controlled."

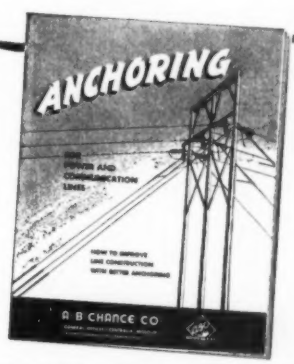
Give the GUY a CHANCE

Recently, a Florida utility company saw how it could save money in two ways on anchor installations. To cut materials costs, this company used *only one* Chance 15 inch Screw Anchor. To cut labor costs, these Chance Screw Anchors were installed by machine. Added together, these savings reduced to a fraction, what this company formerly paid out for guying. And pull tests showed no creep at 22,000 pounds on their installations! You can save money too—specify Chance Anchors for your guys.

SMALLER HUB

The smaller hub on Chance Screw Anchors means less friction—easier installation. Less earth is disturbed during installation. That's why the Blackfoot has greater holding power.

MIKE THE MOLE SAYS: *"Man, this book can help you 'dig' anchors better.*



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Here is the most complete guide to better anchoring ever developed. It's chock full of how-to-do-it material to help you select the right anchor for every guying job—and install it properly. It's FREE!

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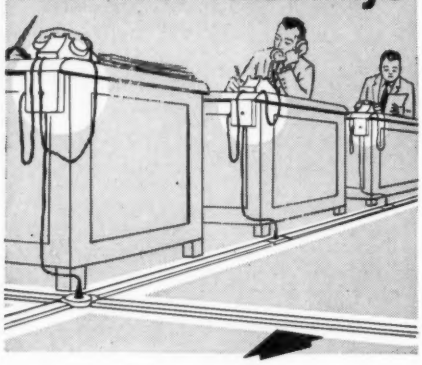
CUT COSTS

on telephone wiring installation and relocation with

PANCAKE

Overfloor Raceways



Pancake, the perfect answer to the growing need for versatile, economical telephone wiring methods, puts outlets right at the *point of use*. Easily installed, moved or extended, Pancake meets the demand for more and more telephone outlets and frequent relocation . . . economically and efficiently. Extremely low, "trip-proof" ramp insures safety . . . heavy gauge galvanized steel construction provides strength and durability.

Pancake meets all code and telephone company requirements. Two interconnecting sizes meet all installation needs.

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THE WIREMOLD COMPANY
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Pancake Overfloor Raceways

pacity for both understanding and progress.

There is something more required of the manager, of the executive, and of each individual in business—yes, even of all businesses—and that is *philosophy*—an interest in and an understanding of the American free enterprise system.

The purpose of every business is to make a profit, but important as is today's profit, it is insignificant in comparison to the maintenance of a society in which profits are both permissible and possible. Hence, it is important to every telephone company and to every business which anticipates continuing in business, that it do what it can to preserve our free society. It can work to this end only through its officers, managers and workers—and they can accomplish no more than they understand.

If we men of business do not develop a more complete understanding of the function of private property and of a free society, and if we do not become more and more articulate with respect to those functions, we might as well forget these speeches and merely "drink and be merry" for on succeeding tomorrows our society will surely die.

Employe of Michigan Company Retires With 50-Year Record

Mrs. Kathryn Smith-Hawley retired from the Paw Paw (Mich.) office of the Union Telephone Co., Owosso, on May 1.

During her half century in the telephone business, Mrs. Hawley has witnessed the growth of the company from a two-position to a nine-position switchboard, and a daily toll call increase from 50 to 1,800 calls per day.

In 1944 she was chosen as an honor guest at a recognition banquet, "Flowers To The Living" given by the Paw Paw Business and Professional Women's club.

Milwaukee Gets New Equipment For Operator Toll Dialing

Automatic switching equipment permitting operator toll dialing was placed in service on May 15 in Milwaukee, Wis.

Milwaukee became the nation's 33rd telephone crossroads city in a joint undertaking by the Long Lines Department of American Telephone & Telegraph Co. and the Wisconsin Telephone Co.

Operating through such telephone centers, the nation's distant-dialing network now embraces some 3,700 cities and towns, according to Long Lines.

THE OPERATOR'S CORNER

Concluded from page 40

help: "Mr. Watson, come here; I want you!" Since that historic night in 1876 the telephone and telephone people have been "friends in need" to thousands of people at times of emergency.

Over the years a tradition of service to the public has grown out of countless meritorious acts and services by employes. This thought of "service first" is more than devotion to an organization. It comes from a sense of individual responsibility in the public service. Many of these acts and services are so outstanding that they deserve some token of recognition more enduring than the spontaneous congratulations of associates and friends.

The Bell System created the "Vail Medal" awards to give this recognition and set up a fund in 1920 as a memorial to Theodore N. Vail, former president of the American Telephone & Telegraph Co., to perpetuate his ideals of responsibility for public service.

We now have two great men in whose honor awards of merit will be made in the future: Morris F. LaCroix, in the Independent telephone industry, and Theodore N. Vail in the Bell System.

Traffic Questions

(1) How should an information operator proceed if she is searching for a listing with only partial or indefinite details furnished by the calling party?

(2) If an information operator finds more than one suitable listing, or where several of the same name are listed close together, on a call where the details given are indefinite or incomplete, how should the operator proceed?

(3) What is foreign exchange service?

(4) When an operator answers a signal, if the calling party says, "There is a mistake on my bill. I am sure the amount shouldn't be so much," what action should be taken by the operator?

(5) Do Independent telephone companies have service awards such as the Bell's Theodore Vail award?

Answers are presented on page 49.

Arkansas Senator Buys Exchange

Sale of the Foreman, Ark., exchange of the Callahan Telephone Co., Broken Bow, Okla., to State Senator Roy L. Riales of Mena was approved on May 13 by the Arkansas Public Service Commission.

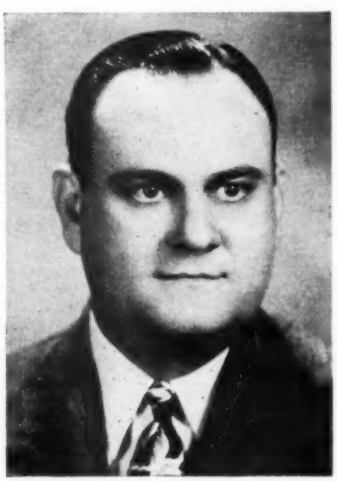
>> Excessive speed was the principal cause of traffic accidents in 1954.

Carlson Announces Changes In Suttle Company

LeRoy T. Carlson, president of Suttle Equipment Co. of Lawrenceville, Ill., has announced that he assumed the duties and functions of general manager of the company, effective May 14.

L. T. CARLSON

Also announced was the promotion of Lloyd V. Baughman to assistant general manager. Mr. Baughman formerly was credit manager of Suttle and has been associated with the company for 22 years.



L. V. BAUGHMAN

Mr. Carlson also announced the appointment of Ralph Davis as assistant sales manager. Mr. Shaw, who has been with the Suttle company for 23 years, formerly was sales analyst.

Another Suttle veteran, M. Shaw, who has been with the company since 1925, will continue to direct the printing division of the company.

Mr. Carlson, in announcing these appointments, reported that the resig-

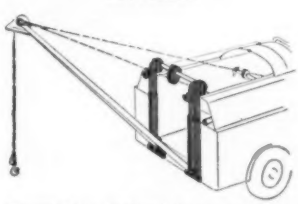
Fold Up Your Derrick from Inside The Cab!

U.S. Patent No. 2,336,965

with the *Tel-E-Lect* STORAGE KIT

Derrick raised by simply engaging the winch.

Vertical position—winch rotation reversed.



Derrick is locked in operating position.

★ Saves Space
★ Saves Time
★ Saves Money

You know what a tough job it is to assemble an "A" frame derrick—and to put it away after use. Now Tel-E-Lect has a simple solution with a real dollar saving in time on the job—a saving of space on your trucks—and a saving in many hours of back-breaking and hazardous work for your men.

The patented Storage Kit fits any standard utility truck body and "A" frame derrick and it can be quickly bolted on the back of your truck by your local mechanic. The derrick will go up or down in a minute or less, entirely controlled by the man in the truck cab. Working with a double drum winch, you get live boom operation—or easily adjustable derrick elevation with a single drum winch.

The cost is only a fraction of other, more intricate derrick storing systems—and there's no rebuilding of your present equipment!

So, while you're thinking about it, drop a line to Tel-E-Lect for diagram and price. It's sensational!

Earth Boring Equipment for All Types of Trucks

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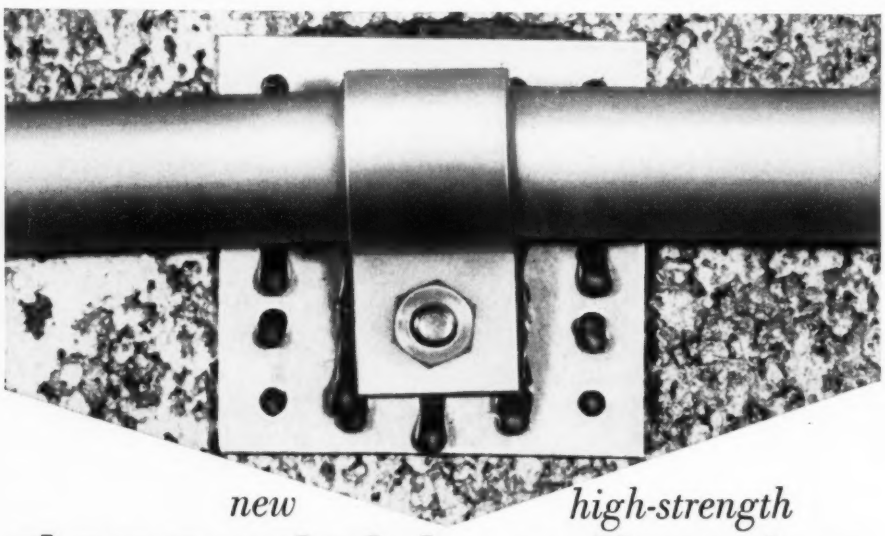

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dependable adhesive

Service-proved PLACCO 1000

Ask us for references on the long-life holding power of Placco 1000. Other advantages are elimination of drilling; ease of installation in congested areas; low cost; quick setting; adhesion to porous and non-porous surfaces; installation indoors or out.

A complete line of wire and cable hangers
is available in either stainless or galvanized steel.
Send for bulletins on both adhesive and hangers.

PIONEER
LINCOLN BOULEVARD **LATEX & CHEMICAL CO.** MIDDLESEX, NEW JERSEY

RALPH DAVIS

nations of B. D. Quackenbush as general manager and of W. C. Strehl as supply sales manager.

Suttle Equipment Co., one of the oldest telephone supply houses, was founded in 1907.

M. SHAW

Mr. Carlson is also president of Calvert Telephone System, Inc. of Calvert City, Ky., and secretary-treasurer of Northeastern Telephone Corp. of Augusta, Ky.

Line Material Co. Opens New St. Louis Warehouse

Opening of a new warehouse at 1526 N. Jefferson St., St. Louis, Mo., has been announced by R. G. Wheaton, Line Material vice president for marketing and sales.

According to Mr. Wheaton, the new 10,000-square-foot warehouse was acquired so Line Material could offer greater customer service throughout southern Illinois and eastern Missouri. The company will still maintain its sales office at 1024 Title Guaranty Building, 706 Chestnut St., St. Louis.

It's true, we have lots to do!

—

How about you?

—

If you're loaded down
with work to do—
and, haven't the staff
to do it—
be it engineering,
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or installation of
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Kennecott Telephone Cable has achieved a reputation for long-lasting service.

Every step of the way—from raw materials to final product, Kennecott experts check and re-check to make certain that all Kennecott cable is of the finest quality.

Kennecott is the name to remember when you order cable. Call your nearest Chase sales office for full information.

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Charlotte†	Denver	Kansas City, Mo.	New Orleans	Rochester†	(†sales office only)

XUM

Open house held by Illinois Consolidated Telephone Co., attracted 3,000 visitors. UPPER LEFT PHOTO: Visitors lined up at entrance of Mattoon office building. UPPER RIGHT PHOTO: One of the groups of school children which was taken on a special tour. LOWER RIGHT PHOTO: Group of visitors receiving information about the history of the Illinois Consolidated Telephone Co. and the territory which it serves.

Illinois Consolidated Holds Successful Open House

Three thousand local citizens helped the Illinois Consolidated Telephone Co. of Mattoon, Ill., celebrate its 60th anniversary by attending a three-day open house held at the Mattoon headquarters of the company.

A tired but happy group of company officials and employes closed the open house late at night on Apr. 22, after ushering through the Mattoon central office building the vast crowd, equivalent to almost one out of every six residents of the city.

The Mattoon exchange was converted to automatic operation approximately five years ago and the building is acclaimed as one of the most attractive and best laid-out buildings in the telephone industry.

The first exchange of the old Mattoon Telephone Co., early predecessor of the present Illinois Consolidated Telephone Co., was opened in Mattoon on Apr. 20, 1895. Starting on that date with less than 100 telephones, the number of stations now served in Mattoon stands at 8,739.

The Mattoon Telephone Co. was organized by Dr. I. A. Lumpkin, grandfather of R. A. Lumpkin, president of Illinois Consolidated Telephone Co.

The Illinois Consolidated Telephone Co. now serves more than 40,000 stations through 32 exchanges in Illinois.

Visitors at the open house were conducted through the building by company employes attired in costumes of the 1890's, which brought into focus the anniversary of the company.

Among the special features of the open house were demonstrations of nationwide operator toll dialing, the "Voice Mirror," which permits one to hear his own voice as it sounds to another person; the new "no hands" telephone, and a display of old telephone instruments which had been in service at times during the past 50 years.

The visitors were attracted to the Mattoon building by recorded music broadcast through outside loud speakers and an array of spotlights which completely flooded the building.

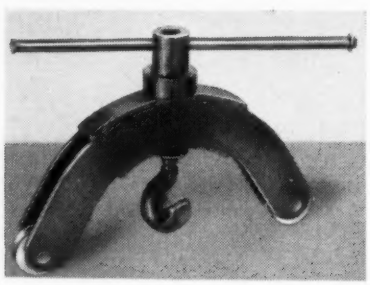
Special tours were arranged for Mattoon school children and youth groups such as Boy and Cub Scouts. The young people showed an unusual interest in the equipment and demonstrations according to R. D. Carlyle, general commercial manager of the company.

"We were very pleased with the results of the open house and we believe such an affair is one of the best means of acquainting the public with a telephone company's program to render the most up-to-date service and especially of impressing upon them the tremendous cost involved in such a program," President R. A. Lumpkin observed.

Missouri Company Asks to Sell

The Missouri Public Service Commission on May 17 received the application of the South Missouri Telephone Co. to sell to Mr. and Mrs. W. C. Deckard its properties at Eminence and Winona.

product of the month



E SLACK PULLER

Here's another Dodge quality telephone tool. For temporarily deflecting suspension strand to introduce slack in aerial cables for splicing and general repair work. Arc-shaped frame supports grooved pulleys at each end. Lifting screw in center (with handle) is mounted on roller bearings. Hook at lower end of lifting screw engages the strand. Wt. 12 lbs.

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Southwestern Bell Purchases Missouri Independent

Southwestern Bell Telephone Co. now operates the Rogersville (Mo.) Telephone Co., following purchase of the exchange from Glenn and Ruby Atkins of Fordland.

The Atkins have operated the Rogersville Telephone Co. since 1947. It was founded in 1907 by Dr. W. A. Atkins and first was named the Farmers & Merchants Telephone Co.

John Wilson Named to New Post With Northwestern Bell in Iowa

John H. Wilson, Des Moines district manager for Northwestern Bell Telephone Co., has been appointed to the newly-created position of assistant to the vice president and general manager in Iowa, it was announced recently.

Mr. Wilson will supervise the company's merchandising activities in Iowa and co-ordinate merchandising and general sales functions.

M. J. Heldridge, district manager at Cedar Rapids, succeeded Mr. Wilson as the Des Moines district manager.

In his new position, Mr. Wilson will be assistant to W. L. Huffman of Des Moines, vice president and general manager for Iowa.

Answers to Traffic Questions On Page 44

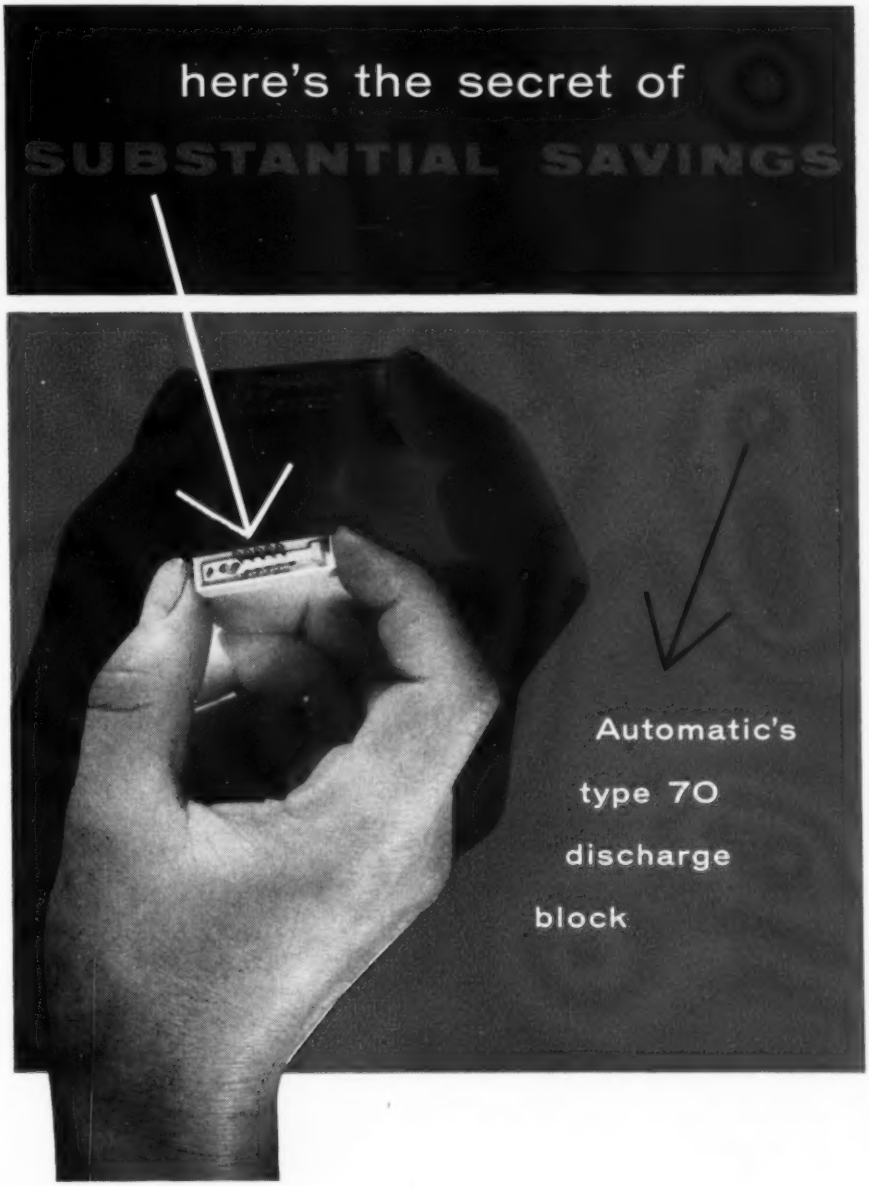
(1) The information operator should suggest each suitable listing she finds as she comes to it by giving the distinguishing details, until one is accepted or until she has completed the scope of search.

(2) The information operator should try to ascertain which one the customer desires by suggesting or questioning, as for example, "I have two on Main Street," or "I find one at 123 and one at 457," or "Do you know the address?"

(3) Where a subscriber is located in one exchange area but has local service from another exchange, he has "foreign exchange service."

(4) Refer the calling party to the person locally designated to handle such calls.

(5) The General Telephone System has recently inaugurated "The Morris Felton LaCroix Award." Additional information regarding this Independent telephone company award is contained in the preface to the questions and answers.



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The building leased by the Stromberg-Carlson Company for the production of carrier equipment.

Stromberg-Carlson Leases Plant To Increase Carrier Production

An industrial building providing 40,000 square feet of floor space has been leased in Rochester, N. Y., by Stromberg-Carlson Co., and will be used for the additional manufacture of carrier equipment, it has been announced by John H. Voss, vice president in charge—telephone division.

The building is now being painted and fully equipped for immediate production. In addition to modern assembly lines, production offices, and the latest type of machines, it also will contain a plant cafeteria. Production will start July 18, Mr. Voss said.

The operations scheduled for the new plant will include winding of toroidal coils, building of filters, assembly of components for a complete line of carrier units for both wire line and microwave multiplex service. A carrier research and development engineering department also will be accommodated in the building, Mr. Voss said.

Full-scale production of carrier equipment also will continue at the Stromberg-Carlson plant in Dallas, Tex., for the next four months, without the usual shutdown for vacations, according to Mr. Voss.

The newly leased building is only a few blocks from the Stromberg-Carlson main plant.

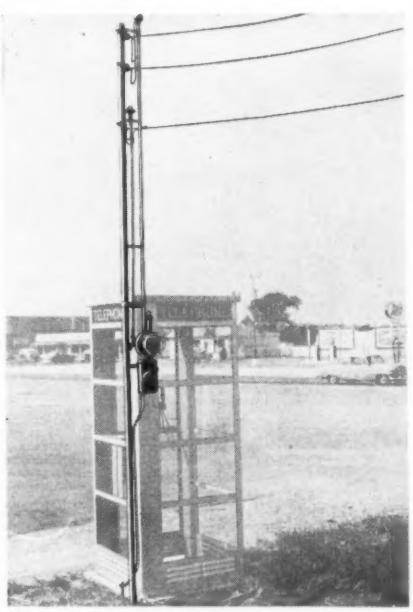
Automatic Electric Makes New Sales Appointments

Automatic Electric Sales Corp. announces that Thomas E. Smith has been appointed district sales manager for the east central district, comprising the state of Ohio and parts of Kentucky, Maryland, West Virginia, Pennsylvania and New York.

He succeeds Robert B. Liepold, who has been named staff assistant to Darwin H. Deaver, vice president and general manager of the sales corporation.

Mr. Smith, who holds an electrical engineering degree from Northwestern University, joined Automatic Electric in 1948. After completing the training course in the company school, he served in production coordination, engineering and administration for two years and then was transferred to International Automatic Electric Corp. as export division manager for South America. In 1952, Mr. Smith was assigned to the company's New York headquarters as staff engineer. Two years later, in 1954, he returned to the general office in Chicago where he served with carrier and radio sales until assuming his present position.

Mr. Liepold received his electrical



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T. E. SMITH

engineering education at the University of Wisconsin. He joined Automatic Electric in 1947, as an engineer, later serving in installation, pricing, sales,

R. B. LIEPOLD

and as a staff engineer at the Washington, D. C., office.

A naval reserve officer, Mr. Liepold was recalled to active duty aboard an aircraft carrier in 1952 and after his release in 1954, returned to Automatic Electric to become east central district manager.

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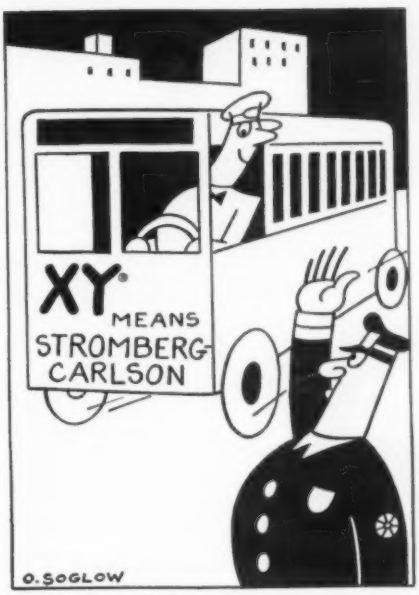

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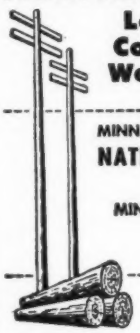

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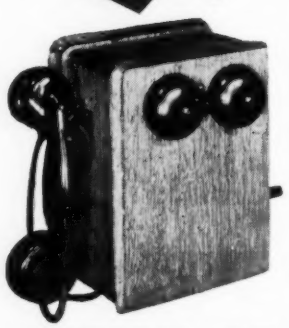

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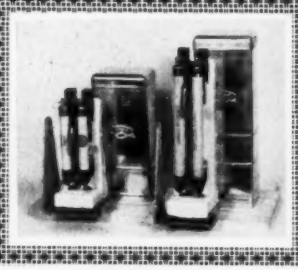

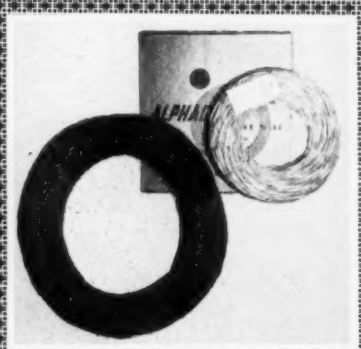

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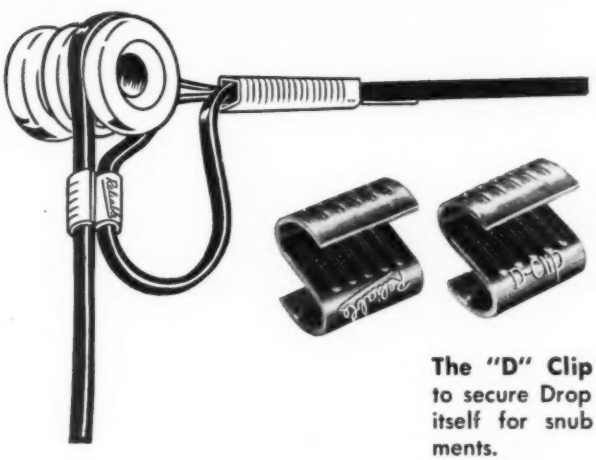

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